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Exhibitors Well Pleased With Interest Shown at Petroleum Exposition

Staff Special
TULSA, Oct. 3

TWO years is a long time in the oil industry. In the two years since the third International Petroleum Exposition revolutionary changes have been made in oil producing and refining methods and equipment.

The fourth International Petroleum Exposition showing oil equipment from a "Doodle Bug" to a gasoline pump, with no intermediate stage omitted, was a remarkable demonstration of progress. Few of the 250 exhibitors at the show failed to display or describe some new device which has been designed during the past two years to aid oil producers, refiners and marketers do their job more efficiently or more cheaply.

Whole new groups of exhibits was shown at the exposition. These displayed the methods and equipment developed for practising the air and gas lift to speed up oil production and get more oil out of the sand. Two years ago one exhibitor showed a compressor specially designed for the gas lift. This year the open air exhibits of engine manufacturers featured gas lift equipment almost exclusively.

A multitude of auxiliary equipment for gas lift installations also was shown, including measuring and controlling devices and other technical instruments. In the Scientific and Technical group of exhibits the Bureau of Mines demonstrated exactly how the lift works from sand body to flow tank.

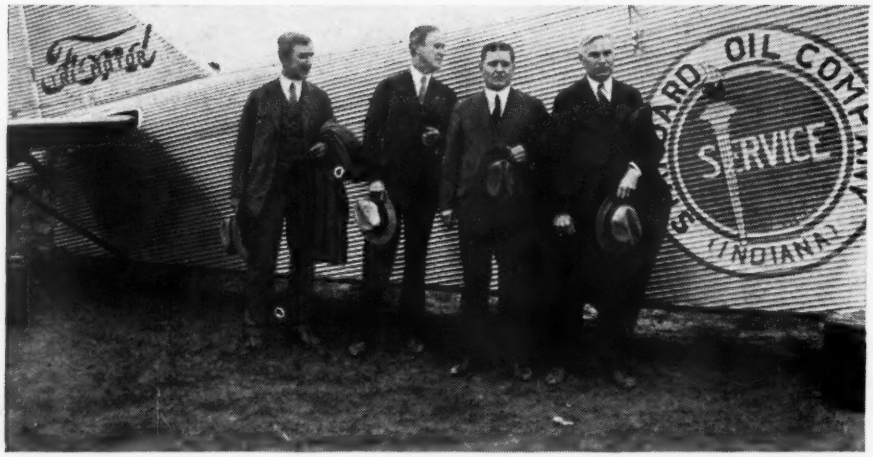
Gas and gasoline engine manufacturers displayed a remarkable group of engines designed for the industry's use in pumping and drilling as well as in automotive units such as the tractors and heavy duty trucks.

William G. Skelly, president of the Exposition, pins the Rockefeller medal on the oldest oil man, continuous service being the deciding factor. The recipient is J. A. Stephenson, Tulsa, who has been producing oil for 67 years and is still active

Although the exposition began in a downpour of rain and ended about the same way with few good days between there was a better spirit of satisfaction among exhibitors with the management and the results of the exposition than at any previous show. Except for Lindbergh day when more than 17,000 persons visited the grounds the attendance of sightseers was not large. On the contrary, a vast majority of those who braved the rain to attend the show were oil men and prospects for the exhibitors.

Heroic efforts were made by J. Burr Gibbons, general manager, to get the exposition out of the mud. Four stone crushers and 40 trucks were kept busy day and night furnishing chat for the grounds during the first three days. The exposition management was forced to spend $6,000 more than it had anticipated to make the grounds footworthy.

The arrangement of the show this year was much superior to that of previous years. All exhibits were placed compactly on the grounds so that the visitor could make his tour with a reasonable certainty of not missing important and in-



The Stanolind, huge tri-motored plant of the Standard Oil Co. of Indiana, flew from Chicago to Tulsa Friday. Well known in the oil industry is the group shown here. Left to right, Allan Jackson, J. J. McGraw, R. H. McElroy and E. J. Bullock. Mr. McGraw is president of the Exchange National Bank of Tulsa and returned from a business trip to Chicago via air. The other three are vice-presidents of the Standard Oil Co. of Indiana

teresting exhibits

The grounds and buildings were business-like in appearance and the side-shows and merry-go-rounds of the third exposition were noticeably absent. It was a business exposition conducted solely on that plane. Those interested in the "Hollywood Girls," minstrel shows and pitching baseballs at dolls could have their fill of that at the state fair on adjacent grounds but not within the exposition enclosure.

At the new site east of the city the Exposition has permanent grounds with ample room for any expansion which may be necessary in future years. W. G. Skelly, president, and the board of directors are agreed that the exposition is to be a permanent institution at Tulsa. Whether the show will be held in 1928 or not until 1929 is a matter which rests largely with the exhibitors. The management of the exposition has been circulating a questionnaire among exhibitors and many have indicated that they would like to see the show held next year.

Because of the early rains the exposition management decided to hold the show open Sunday, Oct. 2, for the benefit of those in Oklahoma oil fields who found it impossible to get in earlier. Exhibitors agreed to keep their exhibits in place two extra days if necessary, but the one extra day was thought to be enough.

Detailed description of many of the exhibits at the International Petroleum Exposition are to be found starting on Page 23, this issue.

Lindbergh and Goebel Bring Aviation

TULSA, Oct. 1

ONE big trouble encountered by those who have charge of oil association banquets is getting the guests to arrive on time. There was no such difficulty Friday night when the Mid-Continent Oil & Gas Assoc., Oklahoma-Kansas division, held its annual dinner. A half hour before the hour for starting a densely packed crowd was shouting for the doors to open and when they finally parted it was like a college class rush.

The reason was the appearance of Col. Charles Lindbergh. The trans-Atlantic aviator had landed early in the afternoon, had been properly paraded through the streets and was now to make his one appearance at a dinner and tell the business men something of commercial aviation and what they could do to promote it.

Because of this visit, the Mid-Continent association joined with the city of Tulsa, the International Petroleum Exposition and the National Aeronautical Association in giving the dinner. More than 3,000 tried to get the precious tickets; about 750 succeeded.

An added attraction, if one had been needed, was the appearance of Art Goebel, winner of the Dole prize for the Hawaiian flight, who flew from Bartlesville the previous day. Goebel, whose appearance in Tulsa was sponsored by Frank Phillips, one of his backers in the prize flight, was accorded as enthusiastic a reception at the banquet as was Lindbergh. The diners appreciated fully the opportunity of seeing at one time the aerial pacemakers of both the Atlantic and the Pacific.

Lindbergh's address was brief and concerned only with the mission he is on. He is making the tour under the auspices of the Guggenheim foundation and is promoting civic interest in commercial flying. He told the Tulsa audience that no city of importance can now afford to delay in establishing suitable airports. Commercial flying is moving with such rapid strides that airports should be

Index to Coming Meetings

Technical meeting, Western Petroleum Refiners Association, El Dorado and Wichita, Kan., Oct. 10 and 11 respectively.

Fuels Division, American Society of Mechanical Engineers, St. Louis, Mo., Oct. 10, 11, 12, 13.

Wisconsin Independent Oil Jobbers association, Plankinton Hotel, Milwaukee, Oct. 12.

California Natural Gasoline Association, Biltmore Hotel, Los Angeles, Oct. 15 and 16.

Petroleum Division, A. I. M. E., Texas Hotel, Fort Worth, Tex., Oct. 19, 20.

Virginia Independent Oil Men's Association, Monticello Hotel, Norfolk, Va., Oct. 20, 21.

Independent Oil Men of America, Congress Hotel, Chicago, Oct. 24, 25, 26.

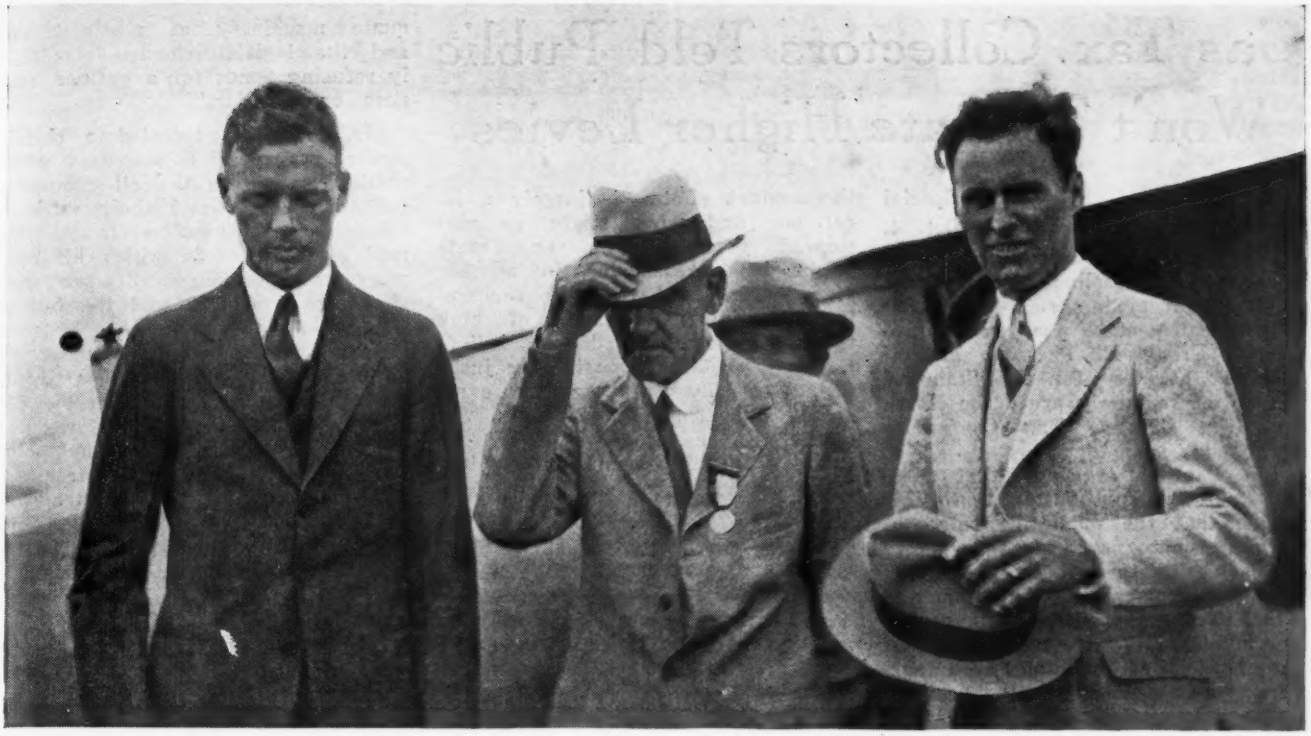
Natural Gas and Petroleum Association of Canada, Prince Edward Hotel, Windsor, Ont., Oct. 28.

American Oil Men's Association, West Baden Springs Hotel, West Baden, Ind., Nov. 2, 3, 4.

Indiana Independent Petroleum Marketers Association, West Baden Springs Hotel, West Baden, Ind., Nov. 3.

American Petroleum Institute, Hotel Stevens, Chicago, Dec. 6, 7, 8.

Ohio Petroleum Marketers Association, Neil House, Columbus, O., Feb. 23, 24.



Left to right, Col. Chas. A. Lindbergh, Mayor Newblock and Art Goebel

given the same consideration as highways, he said.

Earlier in the day the sponsors of the banquet, through the directors and the city commissioners, had adopted resolutions pledging support to the cause Lindbergh represents. He carried away with him a copy of the resolutions.

Lindbergh spends no time in telling of the flight that thrilled the whole world. The only allusion he made to it was prompted by the remarks Goebel had made. The trans-Pacific flier said that his feat was made possible by Lindbergh, that financing was impossible until the Paris venture had been accomplished. Lindbergh told the audience that of the two achievements, Goebel's was the more hazardous. A longer water gap was spanned in going to Honolulu than flying to Paris and the target was smaller.

Aside from aviation, there was one short address on oil. James A. Veasey, general counsel of the Carter Oil Co., spoke on conservation. He had been allotted 25 minutes, but he used about 10 of them. He reviewed briefly the findings that were made by the Federal Oil Conservation Board a year ago, when it was asserted that the federal government possessed, in the opinion of the board, no authority to regulate production. The industry was "startled," said Mr. Veasey, a month ago when the chairman of the board, Dr. Hubert Work, in an address before the American Bar Association at Buffalo, said the time is now here when recommendations should be made to Congress for legislation to regulate production. tution that the national congress has no power to regulate production of any industry, that only the several states possess such authority. Yet, on this character of question, the supreme court several years ago divided five to four.

He desired to leave the thought, said Mr. Veasey, that public opinion can compel practically anything and that, if the oil industry does not effect satisfactory solution of its problems, national legislation may be enacted and pass the test of the courts.

Friday afternoon, prior to the banquet, the Oklahoma-Kansas division of the association held a business meeting. Six new names appear now in the list of the 87 members of the executive committee. J. W. McCulloch, of Okmulgee, succeeded W. C. Abrams, former vice-president of the Noble Oil & Gas Co.; Charles Grimes, Tulsa, succeeded J. W. Bates, of the Reiter-Foster Oil Co., resigned; L. B. Jackson, Tulsa, was elected to the place of John S. Griffin, deceased; J. B. Milan, Chelsea, succeeded W. L. Jefford, deceased, and R. R. Irwin, White Eagle Oil & Refining Co., Kansas City, succeeded Lee Scott, formerly or that company. E. P. Jones, Okmulgee, was added to the committee.

Principal business transacted by the association was the adoption of a resolution asking the secretary of the interior to modify regulations on leasing of restricted lands of the Five Civilized Tribes. At the first of this year the practice of auctioning leases on these lands was started. Under the present regulations, a successful bidder must deposit part of the purchase price, then go out and find the Indian who owns the land and secure his signature. The association asks that this work be performed by the department, as it imposes a considerable burden upon the oil man.

The Oklahoma-Kansas division will elect officers at a meeting of the executive committee to be called sometime this month by President Henry McGraw.

Southeastern Missouri Marketers Organize

ST. LOUIS, Oct. 3.—A meeting called Sept. 28, by J. D Streett & Co., lubricating oil specialists here, resulted in the organization of the Southeastern Missouri Oil Marketers Association. The meeting was held at the Idan-ha Hotel. Officers are:

B. F. Davenport, Just Rite Oil Co., Poplar Bluff, president; John Davis, S. E. M. Oil Co., Bloomfield, vice president; and E. C. Smith, Kelso Oil Co., Cape Girardeau, secretary.

To the board of directors were appointed: H. E. Miller, H. E. Miller Co., Festus; H. G. Simpson, Simpson Oil Co., Charleston; M. W. Lloyd, Lloyd Oil Co., Kennett; H. E. Seely, Lead Belt Oil Co., Farmington; Ray Brady, Peoples Oil Co., Cape Girardeau; A. J. Dillman, Dillman Oil Co., Caruthersville; and R. L. Barger, Fletcher & Barger, Ironton.

Dinner and entertainment were furnished by the Streett Company at the first meeting, according to K. C. Baker, general manager. Next meeting of the association will be held at Cape Girardeau Oct. 18.

Gas Tax Collectors Told Public Won't Tolerate Higher Levies

Staff Special

COLUMBUS, O., Oct. 4.

IMPOSITION of higher and higher taxes on gasoline will bring a public result against such taxes that will threaten state good roads programs, Frank E. Packard, general and tax attorney for the Standard Oil Co. of Indiana, warned the North American Gasoline Tax Conference here today.

Mr. Packard suggested that gasoline taxes be kept within reasonable limits, that the public be fully informed what part of the money it passes to the oil company goes to the oil company for gasoline and what part goes to the state, county or municipality as tax, and that the burden of building hard surface roads be passed in part to succeeding generations which will benefit from them equally with the present generation which, in most states, is bearing the whole burden of construction costs.

He also recommended the drafting of a model gasoline tax measure by the administrators of present tax laws as a guide for legislators in the future. Only the tax rate, which could be altered to meet local conditions, should be left unfilled in the model statute, he said.

Mr. Packard estimated that the motoring public would pay more than $240,000,000 in taxes on gasoline this year and $275,000,000 in 1928. The Standard of Indiana last year paid out $16,790,083 and will pay more than $18,000,000 this year in 10 states of the 11 states in which it markets. He reviewed the increase in taxes from the first 1-cent tax in Oregon in 1919 until today when there are four states with a 5-cent tax, one with a 4½-cent tax, seven with 4-cent tax, two with 3½-cent tax, and 16 with 3-cent tax. In addition to these state taxes, local taxing bodies, in many instances, have added a further excise up to 3 cents a gallon. There are places where the fixed charges of taxes and railroad transportation exceeded 10 cents a gallon, he said, an amount considerably in excess of what the manufacturer gets for his product.

"I DO not believe I exaggerate when I say that in general these two fixed charges range from 3 to 8 cents a gallon," he said. "Probably the average fixed charge and the average manufacturing selling price during the past year would not be far apart.

"I confess that the question of the amount of tax is largely a local one and what might be considered reasonable in one state might be unreasonable in another state," Mr. Packard said concerning the injurious effects of high taxes. "I personally do not believe that a 4 or 5-cent tax is ever justified. Generally speaking my experience indicates that 2 cents will secure all the revenue that a state can economically spend in building highways with any machinery which the legislature provides. As a rule, states are attempting to spend enormous sums of money with inadequate machinery of administration and the legislatures are steadfastly refusing funds for a greater business organization."

Mr. Packard advocated a shrinkage allowance of 3 per cent which would compensate the oil companies for their losses and their work in collecting the gasoline taxes. He said eight states in which his company markets allow 3 per cent shrinkage now. He said the tax on imports (this is the type of most gasoline taxes) was the most desirable but he also was heartily in favor of placing the tax on the distributor, requiring him to register. The latter plan, he said, would simplify things for both the state and the industry and would tend to make "bootlegging" difficult. He said he favored enough teeth in the law to make distributors honest.

Atlantic's Safety Contest Cuts Accidents 42%

PHILADELPHIA, Oct. 1.—A safety contest to reduce the number of lost-time accidents at the Point Breeze Philadelphia refinery of the Atlantic Refining Co., has effected a reduction of 42 per cent in such accidents so far this year, as compared with the past two years.

The contest started in earnest when C. J. Cutting, superintendent of the mechanical department, hurled a challenge at the process division, which is under the supervision of T. G. Delbridge that his mechanics would have fewer lost-time accidents at the end of this year than the process operators.

Mr. Cutting's challenge has been backed up by the mechanics who have won four months and tied one since the beginning of the contest.

Interest aroused by this contest is responsible for the large reduction in accidents. Between October, 1924, and Dec. 31, 1926, lost-time accidents at this refinery averaged 17 per month. This has been cut down to an average of 10 per month so far this year, with the monthly totals still coming down. October, 1926, was a record month with no lost time accidents. but November and December of that year were not so good; hence Mr. Cutting's challenge.

The following comparative statistics give some idea of the results of the campaign:

	Nine months 1926	Jan.-Sept. 1927	Improvement	Reduction
Lost-time Accident ..	158	91	—67	42%
Days lost.....	26,868	7,620	—19,248	75%
Deaths	4	1	3	.....
Wages lost @ $4.50 per day	$120,906	$33,290	$87,616	.....

Due to the good showing at the Point Breeze plant, this campaign is being extended to all refineries and sales districts. A no-accident month for October is the first goal and a lively spirit of friendly rivalry is being exhibited by the mechanical and process divisions.

Stories on the Atlantic company's safety drive were published in the Aug. 3, 1927, and Aug. 24, 1927, issues of NATIONAL PETROLEUM NEWS, pages 65 and 64, respectively.

Predict New Fords Will Have Gear Shift

Staff Special

CHICAGO, Oct. 1.—Detailed specifications for the new Ford car, (which dealers over the country are urging prospective automobile buyers to wait for) have been released to a restricted mailing list by Barnsdall Refineries, Inc. W. Wiley Rice, assistant sales manager at 624 South Michigan av., Chicago, says they are unofficial but authentic.

The two features of the new model which mostly interest the oil marketers of the country are (1) that the old planetary gear shift will be done away with and replaced by a standard gear shift, and (2) the machine is represented as being able to make 30 to 35 miles on a gallon of gasoline. It is to have a four-cylinder motor.

There will be no need of special anti-chatter oils, of course, for the new Fords if they have a gear shift.

Of course the decrease in demand for special Ford oils will be gradual.

Ford dealers express belief that the new Ford will be equipped with standard gear shift, as the Barnsdall letter predicts. But they say the demand for specialized Ford oils, and other Ford necessities, will not disappear for five years at least.

"Old Man Accident" Being Run to Cover By Oil Company Safety Workers

By Ward K. Halbert
N. P. N. STAFF WRITER

CHICAGO, Sept. 30.

PERSONAL injuries to workmen, serious enough to make them lose time off the job, were occurring at the rate of 12 per thousand employes per year at the Whiting, Ind., refinery in 1918, when the Standard Oil Co. of Indiana went in seriously for accident prevention. Now they are running 1.5 per thousand per year at that plant and the company has put in safety programs at all its plants and throughout its marketing division.

These facts were disclosed by R. E. Humphreys, member of Standard's board of directors, with duties in the manufacturing department, speaking before the Petroleum Section of the sixth annual Safety Congress in session here this week. Dr. Humphreys told the oil men something about how it was done and the principles of his safety policy.

"The management is entirely responsible for mechanical hazards," he said, "and mechanical safeguards must be installed before it is worth while to start preaching caution to the men. Suppose a man is working where he is in danger of falling and gets a flying particle of steel in his eye. You can't blame him for not wearing his goggles. He might say, 'I have to watch my step. Why isn't there a hand rail on that platform?' And there is no answer. The management must do its duty first."

Standard does not pay its employes for suggestions on matters of safety to stimulate interest. Nor does the company make a big show of its safety campaign with bulletins and posters and banners. The plant gets safety as it gets gasoline out of crude oil, by consistent, every-day business routine. Safety work at Whiting is a part of the serious eight hours' work in which all take part.

Officials of the National Safety Council say that all records of attendance and interest in the activities of the Petroleum Section were surpassed at this meeting. The section has grown rapidly since eight oil company executives met in Detroit in 1922 to share each other's experiences in matters of accident prevention. Now more than 100 companies belong to the section, and it is the only section of the N. S. C. to employ a full-time field man. The election of officers here resulted in choosing George F. Prussing, Union Oil Co., Los Angeles, general chairman of the section, succeeding V. R. Currie, The Texas Co., Houston. Dr. R. P. Anderson, technologist of the American Petroleum Institute, New York, succeeded himself as general vice chairman and A. A. Nichoson, The Texas Co., New York, was retained as secretary for another year.

GEORGE F. PRUSSING
Secretary, safety board of Union Oil Co., of California and newly elected general chairman of the Petroleum Section of the National Safety Council

The three regional vice chairmen are: F. A. Scofield, Associated Oil Co., San Francisco, for the Pacific Coast division; T. N. Shaw, Midwest Refining Co., Casper, Wyo., for the Mid-Continent division, and S. W. Candee, Tide Water Oil Co., New York, for the Atlantic Coast division. The general chairman and the three divisional chairmen comprise the membership committee.

O. W. HUMPHREY, Standard Oil Co. of New Jersey, Elizabeth, N. J., heads the poster committee. J W. Meyers, Standard Oil Co. of New Jersey, New York, is chairman of the statistical committee. Ray E. Miller, Marland Oil Co., Ponca City, Okla., is chairman of the program committee. Four engineering representatives are: C. W. Smith, Standard Oil Co. of Indiana, Chicago; Robert E. Donovan, Standard Oil Co. of California, San Francisco; F. L. Newcomb, Standard Oil Co. of New Jersey, Elizabeth, N. J., and C. L. Hightower. Texas Pacific Coal & Oil Co., Thurber, Texas. With all the foregoing the following constitute the executive committee:

V. R. Currie, The Texas Co., Houston; E. J. Senne, Vacuum Oil Co., New York; D. J. Wallace, Mid-Continent Gas & Oil Association, Tulsa; W. L. Eggleston, Pan-American Petroleum Co., Los Angeles; C. P. Anderson, Richfield Oil Co., Los Angeles; H. M. Wolflin, California Petroleum Corp., Los Angeles; R. B. Roaper, Humble Oil & Refining Co., Houston; A. L. Barth, Atlantic Refining Co., Philadelphia; R. S. Bonsib, Standard Oil Co. of New Jersey, New York; C. C. Benedict, Standard Oil Co. of New York, New York; W. C. Lynch, General Petroleum Corp., Los Angeles, and E. D. Murphy, Mid-Continent Petroleum Corp., Tulsa.

SAFETY in the marketing department of an oil business was the newest subject before the organization. Except for two Standard Oil companies, Marland Refining Co. is the only oil marketing unit in the industry as far as known, to organize for accident prevention. That specific work is in the hands of Earl M. Hearne of Ponca City who discussed it at one of the meetings.

Mr. Hearne went into the details of the job, pointing out where the hazards are. Numerically, the filling station contributes half the accidents to the marketing department, he says, the most serious ones developing at the bulk station warehouse. In equipment, he especially recommends drain pits with two stairways to prevent a service station man being trapped in narrow quarters by a fire.

"The truck driver's problem is most complicated," he said. "Whereas most drivers consider they have done a good job when they are able to fasten the blame of an accident on somebody else, the tank truck driver must manage to avoid accidents, no matter who or what the cause.

"To prevent seemingly unavoidable accidents by failure of mechanical equipment, each Marland sales division has one or more regular truck inspectors who examine every item of rolling stock on hand at least once a month. In this way mechanical failures are anticipated and breaks prevented."

H. N. Blakeslee, field representative of the section, spoke on "The Accident Situation in the Oil Business and the Progress Made Thus Far."

He laid special stress upon the growth of the safety movement since it took hold of the oil industry at that preliminary meeting in Detroit in 1922.

R. E. Donovan, of San Francisco, told his experience in fighting fires and designing fire fighting apparatus for the Standard Oil Co. of California. He told how the amount of fire foam solution used in fighting an oil fire had been materially reduced by his company with a method of application, designed by the company's engineers. Dropping the foam 20 feet from the top of a supply tank to the surface of the burning liquid required the use of 24,000 gallons of each of the component solutions, while only 4000 gallons of each were necessary to put out a fire in the same tank of oil when the foam was forced through an asbestos tube and discharged at the surface of the liquid.

The theory is that fire foam is least effective when it has to fall considerable distances through flames before it strikes the oil in the tank. Mr. Donovan explained that the loss in foam occurred in several ways, but largely due to its being blown out of the tank by the current of the flames. Smaller losses, he thinks, develop from the effect of the heat on the falling foam and from the fact that some of it becomes submerged in the oil and fails to cover any portion of the surface.

MR. DONOVAN announced in conclusion that the results of this research of the Standard Oil Co. of California were public property and that many companies on the Pacific Coast were using the Standard's experiments. Specifications for making the apparatus could be obtained by anybody who wished to use it, without charge, he said.

How the Atlantic Refining Co. finds and corrects its unsafe practices before they take their toll of human life, time and money, was told by Ralph E. Motley, Philadelphia. He showed the results of his work at the Atlantic's Point Breeze plant as follows:

"Over the last five years an average of 17 lost-time accidents occurred each month at this plant," he said. "This year we are having only three or four accidents a month and by a special safety campaign in October, 1926, we went through the whole month without a single lost-time accident."

No workman is permitted to enter a tank to clean it until it has been tested by the safety department and passed as "gas free." If for any reason the workmen must enter a tank where it is necessary to use gas masks, a safety department man must be present to see that proper precautions are carried out. Nearly every one of the 350 foremen in the plant has been trained in first aid work, besides many of the workmen.

Standard Oil Co. of Indiana, in its marketing department, in the congested streets of Chicago, also has shown remarkable accomplishments in safety work in the last five years. The story was told in a brief paper by H. J. Tobin.

"FIVE years ago when Standard had about 100 service stations and 350 motor vehicles on the streets of Chicago there was no safety organization and the company's personnel in the city suffered about 90 accidents per month. Today, with 600 motor cars and trucks serving 400 filling stations, the accidents average fewer than 30 a month," Mr. Tobin said.

The Standard of Indiana's way is to go minutely into the details of each accident just after it takes place and make each man involved responsible for it in the eyes of the safety committee. Truck drivers and filling station men are not under the direct supervision of a foreman much of their time. They are on their own responsibility and each must account for his own accidents.

When a man is involved in an accident he must go on his own time to the company's main office and meet the safety committee (organized like most others, of his fellow workmen) and explain how the accident happened. Then he leaves the room while the committeemen discuss it, in the light of his testimony and that of other witnesses and also in view of his past record. Later he returns to the room for their verdict.

The committee is not a trial body. It only investigates and recommends to the proper authority. It may exonerate the man and commend his behavior under trying circumstances, or it may make a black mark against him as partly or entirely to blame for what happened. They may recommend his demotion or even his discharge.

"SAFETY must come from the top of an organization down and never from the bottom up, in order to be successful," was the main point in an address by C. L. Swim, Skelly Oil Co., Tulsa, who discussed his company's work in the field of production. In support of his contention he offered two main reasons:

1.—Safety for workmen depends in a substantial measure on safe conditions under which to work and it often involves some expense to get these safe conditions. The management must approve these expenditures and recognize them as profitable investments.

2.—The foreman of a crew of men is the key man. He can make or ruin a safety program as far as his authority goes. For this reason the boss must understand that the management is interested in safety, holding him accountable for the welfare of the men under him.

Methods for promoting safety at a natural gasoline plant, both under construction and in operation, were discussed by W. L. Eggleston, Pan-American Petroleum Co., Los Angeles. His remarks stimulated a great deal of interest, even among those who never saw a gasoline plant, because he impressed them (using his own words) "that a natural gasoline plant is at best a concoction of the devil that must be handled with extreme caution if fire and accidents are to be prevented."

Mr. Eggleston emphasized the hazards of the task in hand; the importance of speed in construction, usually in a flush field where there were free gases; the need for welding in the presence of gas; the crude material and the finished product alike being highly flammable; the fact that heat is indispensable in the manufacture of natural gasoline, and finally that safety is not simply important but essential to efficient operation.

In the absence of an established science on the subject, Mr. Eggleston's plan was to study the situation himself and issue explicit instructions to govern the behavior of the men on the job. After giving them a chance to study his instructions and "reason why literature" he asked them questions and graded their answers. Those whose answers indicated careful study were given noticeable advantages over their fellows and interest kept up in this manner.

"FIRST aid was our fourth and last consideration in these instructions", he said, "because a dead man does not need first aid. Our first thought was fire prevention, for fires in such places are often tragedies Accident prevention we considered second in importance. Fire fighting plans were third because if we could prevent fires we would not have to fight them."

B. V. Osborn, safety director of the Casper, Wyo., refinery of Standard Oil Co. of Indiana, talked about departmental and plant inspection committees.

Accident prevention is more a matter of working on the men than on their surroundings, Mr. Osborn thinks. Through safety committees among the workmen in the plant, the safety director can come in contact with a maximum of men. By educating them, more accidents can be prevented than by simply eliminating the obvious dangers about the plant. Moreover, he says, the director invariably learns something from every man he works with.

In the Casper plant, safety committees are numerous and have duties of inspection in certain sections of the plant. The committees meet monthly to keep the subject fresh in their minds, and the personnel of each committee changes every six months.

Scouting the Exposition Grounds

TULSA, Oct. 1

THE popularization of the scientific side of the oil industry was a task which the Exposition management set for itself this year and the extent to which it succeeded was shown by the congestion around the various displays each afternoon and evening.

Interest naturally centered on anything pertaining to Seminole and the Exposition provided plenty to see on that subject. The gas lift has been the big theme of the year and the U. S. Bureau of Mines, which has paid particular attention to this subject, turned out one of its finest pieces of work in the form of a glass working model. Saturated oil sand was shown through plate glass, with glass tubes representing casing and tubing leading into the sand. The visitor thus could actually see the flow of oil through these tubes to the traps and thence to tanks. It was operated both with the flow through the casing and through the tubing. Other exhibits of the bureau showed the effect of water encroachment in a well flowing wide open and another alongside flowing through partly closed valve with the water thus held back from the well; a working model of the repressuring of sands, in common use on depleted properties; a display of 420 samples of crude oil from all parts of the world.

More about Seminole: Hayden McDonald, a junior geologist on the staff of the Prairie Oil & Gas Co., turned out a relief map of the top of the Wilcox sand in the Seminole City, or original Seminole, pool. It made understandable the statements as to the extreme variations from well to well in this field. This was under a glass plate on which were drawn the lease boundaries, operator's name, well numbers and initial production.

THIS was quite a cooperative piece of work. It was made by a Prairie geologist, in the work shops of the Sinclair Oil & Gas Co., from a contour map supplied by the Skelly Oil Co. and elevation figures by Laughlin & Simmons. It formed part of the display of the Tulsa Geological Society, which included a relief map of the Garber field and the Osage-Hominy field. There was also a large box of the Wilcox sand that was flowed from the Spencer well of the Skelly Oil Co. in the Earlsboro field.

The U. S. Geological Survey was not represented this year, but it loaned a number of maps to the Oklahoma Geological Survey to use in the exhibit of the latter. The state survey exhibit was an elaborate one and included 318 geologic specimens. Of these, 118 were rock formations representing about 75 per cent of the geologic formations of the state. One hundred and nineteen fossils occurring in these formations were shown. They ranged from size so small as to require a microscope to a large ammonite from Love county, 20 inches in diameter and weighing 100 pounds.

Of particular interest to the oil producer was the display of oil producing formations of Oklahoma. In this collection was a sample of the Wilcox sand from the first well drilled to this horizon. This historic event occurred in April, 1914, the test being that of H. F. Wilcox, in 3-16N-13E.

Through the courtesy of the Roxana Petroleum Corp., Exposition visitors were enabled to see the much discussed torsion balance, seismograph and magnetometer. All these are aids in the finding of structure that may be oil bearing.

THE division of standardization of the American Petroleum Institute, with much of its program accomplished fact, felt like showing off before company this year. It displayed a number of master thread and tool joint gauges, the Institute's handbook and a number of large drawings illustrative of the work that has been done.

The Colorado School of Mines was present with an exhibit on the recovery of oil from sands by flooding with alkaline solutions. Steel pipes, bent to represent anticlinal and synclinal structure, were filled with sandstone 70 per cent saturated with crude oil. A 2 per cent solution of sodium carbonate was pumped into the pipes and the action of the solution in breaking down the oil film around the sand was illustrated.

A model pumping lease, representing a 40-acre tract with four wells being pumped by underpull steel rim band wheel power and counterbalanced jacks was shown by the Union Machine Co., of Bartlesville, Okla. H. G. Durnell, whose name is given to the band wheel power in common use, designed the model. Another miniature pumping lease was shown by the Tidal Oil Co. This was made by Al Rose, of the Tidal, and has been exhibited several times before, including the occasion of the Wembley Exposition, in England.

The American Association of Petroleum Geologists, the University of Tulsa, the Tulsa Public Library, were others who had displays in the scientific and technical building.

* * *

Bessemer Gas Engine Co., of Grove City, Pa., had an impressive exhibit of heavy machinery in motion. The exhibit was housed in a steel building and all the engines were mounted on concrete foundations. The principal feature was the big 80-h.p. type X-E Bessemer gas engine featuring the new gas economizer, and direct connected to a 2-stage compressor with the new SA 2 cylinder. This unit was operated continuously under full load.

* * *

Clark Bros. Co. Exhibit gave one the impression of being in a gasoline plant, gas-lift compressor station, booster station, and in the engine house of a drilling well, all at the same time, for the company showed in actual operation equipment designed for all those purposes.

One of the most interesting exhibits was the new vertical 4-cycle engine direct connected to the duplex tandem 2-stage compressor, operating against full load on timber foundations. At atmospheric intake, this unit has daily capacity of 330,000 cubic feet at 400 pounds pressure.

The company also featured its Super-Two 90-h.p. tandem compressor, equipped with the Super-Two fuel economizer, which is said to have a lower fuel consumption than a 4-cycle engine. This unit, at atmospheric intake, delivers 450,000 cubic feet daily, at 350 pounds pressure. Its operation was charted at the exhibit on a Foxboro panel board, with recording gauges showing actual capacity and fuel consumption.

* * *

REMOVAL of B.S. from oil tanks has been a bugbear to the lease foreman throughout the history of the oil business. The Oil Conservation Engineering Co., of Cleveland, O., showed how this problem can be overcome. B.S. can be removed without opening up the tank and, what is of greater importance, without drawing out the oil.

The device shown by small model is known simply as a tank cleaner. A spiral gathering arm, rotated by hand crank which is on the outside of the tank, scrapes the bottom settlings and carries them to the center, keeping them piled up around the intake to suction pipe. Good oil cannot break

through this pile until the tank is cleaned.

The cleaner is made in a standard size for 250 and 500-barrel tanks but is made also in larger sizes. It is installed in a short time without skilled labor or special tools. The only tanks in which it is not practicable to install the cleaner are those having supports at points other than the center.

The Oil Conservation Engineering Co. showed a new type of cooling coil, which is made of tubing and headers that can be removed easily for cleaning the tubes. It exhibited also its standard line of Oceco evaporation loss controls. The Oceco flame arrester, which is in general use in the United States and many foreign countries, was shown.

* * *

L. Horning, president of Waukesha Motor Co., Waukesha, Wis., personally greeted the visitors to the booth and display of his company. Exhibited were a cable tool drilling unit being a 125 h.p. 4-cylinder reversing clutch engine mounted on heavy H-beam frames, a portability feature that has been quite popular; a 125 h.p. compressor unit with self-contained cooling system and 60 h.p. engines with speed reducers, for driving pressure pumps.

* * *

A NEW line of high temperature and high pressure preheaters and heat exchangers were shown by the Southwestern Engineering Co. of Los Angeles. In addition the company displayed a commercial 7,500-gallon gasoline plant and a Collins water-tube boiler for semi-permanent field installations.

The new Southwestern heat exchanger is of the short tube, fully enclosed type in which the company specializes. It is designed to handle oil with temperatures running up as high as 850 Fahr., such as hot residuums from cracking stills. The entire section is surrounded by an expansion joint.

The high pressure preheater is designed to handle pressures up to 750 pounds per square inch, giving the operator a great latitude of operating conditions.

* * *

In the Scientific and Technical building, Westcott & Greis, Inc., of Tulsa, filled three connecting booths with an elaborate display of the various gas appliances distributed by the company in the Mid-Continent field. Westcott & Greis are agents for the Metric Metal Works, G. M. Davis Regulators and a number of other appliances.

The new Jordan & Taylor, "Jat" intermitting control system for gas lift wells was prominently displayed. With this system wells are intermittently pumped by the gas lift, the tubing alternately filling under well pressure and producing under gas pressure.

* * *

A new glass cylinder for visible gasoline pumps were introduced to the industry by the Clear Vision Pump Co. of Wichita. The cylinder is known as the "Water-Clear" and is designed to prevent the discoloration of gasoline in visible pumps through the action of sunlight. It is claimed that the glass is impervious to the chemically active ultra-violet rays contained in sunlight.

Another new addition to the Clear Vision line is an air compressor which was shown for the first time at Tulsa. The compressor was designed for extremely quiet operation as well as durability and low maintenance cost.

* * *

The display of the Taylor Instrument Co. in the Scientific and Technical building at the exposition contained a number of new applications of recording and controlling instruments for the industry.

* * *

One new device shown was a 2-pen recorder of pressures. The instrument was devised to aid in controlling air and gas lift operations by showing flow pressures and casing pressures on the same chart. Another application of the instrument is for showing the intake and discharge pressures of compressors.

Another new pressure gauge was shown for refiners with vacuum stills where subnormal pressures are maintained. A new pressure controller was shown for regulating back-pressures on boilers, cracking stills and absorbers.

* * *

Wertzberger Derrick Co. showed one 80-foot derrick and one 122-foot. The latter displayed Titusville Iron Works flat-top rotary, boiler, engine and pumps. The other derrick shown was by the National Turnbuckle Derrick Co., tubular steel. A number of manufacturers showed belts, fishing tools, etc., in connection with the drilling wells.

* * *

NO EXPOSITION can be called such without a lot of drilling equipment in action. This year's show had six derricks up in the center of the grounds. Three were shown by the Parkersburg Rig & Reel Co., being one pumping derrick, displaying in connection therewith the Ruf-Nek geared pumping unit manufactured by the Link-Belt Co. and distributed by Parkersburg; one derrick equipped for cable drilling, using Hinderliter Tool Co. tools and Parkersburg 6-inch A.P.I. specification rig irons. The third derrick of this company was a combination cable and rotary type.

* * *

The Zero Hour Torpedo Co., which makes time bombs for firing nitroglycerin shots showed several of its units and also put into circulation some "Producer's Proverbs, in 1927," which came from the gifted pen of "Bill" Cheley, president of the company. Some of the proverbs:

"A shot in the sand is worth more than any number in the pipe."

"A buried shot puts no oil in the tanks—only gray hairs in the superintendent's head."

* * *

Buckeye Traction Ditcher Co., Findlay, O., exhibited its "baby" ditcher and sold several of the larger ones. Sales Manager Royce, present at the show, says his company has been faring nicely because of the large amount of gas and oil pipe line work that has been under way this year.

* * *

TYPE OP-13 of the Nuttal double reduction oil well pump gear units was shown by the R. D. Nuttall Co., Pittsburgh. This is the type used extensively on combination rigs. It is used for pumping, cleaning, swabbing, bailing, pulling rods or tubing and for drilling. These units are designed to do the work of the commonly used band wheel drive with its accessory belts and chains. The prime mover is direct connected to the high speed shaft through a flexible coupling and the standard pitman is attached direct to the crank mounted on the low speed shaft of the gear unit. The unit can be used with either a 15-35 or 20-50 oil well motor, or a multi-cylinder gas or oil engine of equivalent rating.

* * *

DeLaval Separator Co. showed this year with particular emphasis, its centrifugal machine for purifying engine and compressor cylinder oil. Samples of oil thus reclaimed and made servicable again were displayed.

* * *

Willis C. Brown, the omnipresent district manager for the Foxboro Co., Inc., Foxboro, Mass., told those who happened not to know about it the virtues of the new style orifice meter and the volume controller for air or gas lift.

* * *

Billings & Spencer Co. and the Duff Manufacturing Co. shared space in booth 83, Texas building. H. C.

Gardner, district representative at Fort Worth for both companies, was in charge of the exhibit. The Duff company showed its new Duff 100-ton geared ratchet jack, designed for raising casing, while the Billings & Spencer Co. exhibited a line of tools, chain tongs, and wrenches.

* * *

The R-B winch, manufactured by the Braden Steel & Winch Co., Tulsa, profited by the bad weather during the Petroleum Exposition. The company announced that any car getting stuck in the mud—and there were many of them—would be pulled out free of charge with the R-B winch. There is no record of its having failed to rescue any car or truck during the show. The company also demonstrated the winch in booth 132, Texas building. T. J. Schuetze, general manager and sales manager of the winch department, was in charge.

* * *

H. B. Murphey, manager of the Dallas office, was in charge of the exhibit of the Chicago Bridge & Iron Works at the Petroleum Exposition. The new Wiggins breather roof was shown in model form for the first time.

* * *

DUNN MANUFACTURING CO. of Oxnard, Cal., occupied a large space in the Texas building at the Petroleum Exposition. The company showed several new devices, among them rotary tongs, tubing tongs, tubing stops, rotary casing elevators, automatic rod and tubing hooks, and slip elevators for tubing and casing. A full line of the company's other drilling and production devices also was shown.

* * *

Among new products shown by the Eagle-Picher Lead Co. at the Petroleum Exposition were oil refiners' sublimed litharge, and rope socket metal.

* * *

Frank Hinderliter and Herman Hendershot again presided over an interesting display of Hinderliter tools at the Petroleum Exposition.

Three new Hinderliter fishing tools were exhibited and demonstrated at the Exposition. One was a bell-socket spear designed to catch bailer where the bail has been cut in two by the ordinary latch jack. This spear takes hold inside bailer with slips, and is so designed that it cannot "egg" the bailer, preventing its removal from hole, as the bell goes down on outside of bailer and the slips inside.

Another new tool is the trip latch jack, designed for fishing for bailer and eliminating the usual result of cutting the bail in two.

* * *

Miller Improved Gas Engine Co., Springfield, O., had the largest gas-engine compressor on the grounds of the Petroleum Exposition. This was its direct-driven 170-h.p. unit, which was kept in continuous operation during the show.

* * *

W. E. FOSTER, sales engineer, Bridgeport, Conn., and Larry Kennedy, Tulsa district representative, were in charge of the extensive exhibit of the Reading Steel Casting Co. at the Petroleum Exposition.

The company showed an entirely new line of cast steel gate valves, series 15 to series 90, with a corresponding line of fittings.

* * *

Reading Iron Co. of Reading, Pa., was represented at the Petroleum Exposition by A. M. Cullum, district manager, N. R. Putnam, and A. C. Milliken, all of Tulsa. The company showed its new A.P.I. standard tubing, both upset and regular and a general line of Reading wrought iron tubular goods

* * *

Henry Vogt Machine Co. showed its new type drop forged steel return bend or junction box. It also showed its new type 3-inch and 4-inch flanged globe and gate valves, designed to operate under 1,000 pounds pressure at temperatures up to 900 deg. F.

* * *

E. W. McKay, district manager, Tulsa, was in charge of the exhibit of the Hope Engineering & Supply Co. at the Petroleum Exposition.

The Exhibit featured the Hope 160-h.p. direct driven vertical compressor driven by 4-cycle gas engine. It also showed for the first time its new 40-h.p. direct-driven compressor with 2-cycle engine, featuring fuel gas injection under pressure and the air scavenger.

* * *

HALLIBURTON OIL WELL Cementing Co., of Duncan, Okla., had a complete gear-driven truck-mounted cementing outfit in actual operation. The outfit is mounted on an F-W-D 3-ton truck, powered with Waukesha motor, which drives the truck and the high pressure pump through a power take-off on transmission. The low-pressure pump is operated by a Dodge Brothers motor direct connected to a type LZ 21 Northern Fire Apparatus pump, which operates the cement mixer. Included in this exhibit was the new Halliburton device for measuring depths of wells. The exhibit also featured the new Halliburton sand tester, a device for testing sand when drilling with rotary. Use of this device permits an accurate estimate of the amount of oil or gas in any sand found.

* * *

Gaso Pump & Burner Manufacturing Co., Tulsa, showed a new pump unit. This was its Gaso 2½ x 7 x 10 interchangeable enclosed center-drive herringbone gear discharge pump, driven by electric motor, and in actual operation at the company's booth. The pump is self-lubricating and has Timken roller bearings on the pinion shaft. It can be operated by other power than electric motor if desired.

* * *

Whealton & Townsend, Inc., distributors of Chicago Pneumatic Tool Co. products, had one of the largest machinery exhibits on the grounds of the Petroleum Exposition. Housed in a steel building, a number of heavy machines were mounted on permanent concrete foundations, and were shown in operation under actual field conditions. The company plans to maintain the exhibit in place, using it both as a show room to demonstrate the engines to customers, and as a laboratory in which various experiments will be conducted during the winter.

* * *

THE "Nultra" cylinder for visible gasoline pumps made by the Corning Glass Works for which the Gilbert & Barker Mfg. Co. has exclusive sales rights, was a feature of the exposition exhibit of the latter company. A Nultra cylinder was displayed at the booth beside an old plain glass cylinder which was excessively coated with a yellowish deposit from gasoline.

Two improved pumps were shown at the booth, the T-176 an improved wet hose type and T-179 a sliding discharge visible. A feature of these pumps is the semaphore signal which shows where gasoline is going, to the car or to storage.

* * *

Refiners visiting the exposition this year were deeply interested in an animated flow sheet of the Braun Oil Refining Unit which occupied the center of the large booth maintained by C. F. Braun & Co., Alhambra, Cal. The flow sheet was of unique design, showing the flow of oil and vapors through the unit from crude storage to run-down tanks, exactly as they would flow in a standard unit.

The Braun oil refining unit is a new offering to the industry under

Stratford patents developed at refineries of the Associated Oil Co.

Cold crude is brought through a series of heat exchangers to a system of convection coils in the still stack, thence to a radiant coil in the furnace and finally to the still where the centrifugal pump constantly picks up oil from the surface as well as the bottom of the still and throws a series of jets to the bottom of the still. Any desired finished cuts may be taken from the bubble tower in the system. A complete description of the method is published in this issue of NATIONAL PETROLEUM NEWS.

The Braun company was showing a new model of its atmospheric cooling tower for gasoline plants and refineries. The tower has a newly designed distributing section at the top to insure a more even flow of water. An aluminum model of the Braun distillation unit for gasoline plants was shown also.

* * *

ONE of the newest Class III tank cars produced by the North American Tank Car Corp. was spotted by that company on the exposition grounds at the entrance to the Oklahoma building for the inspection of visitors. The car was freshly painted with Cook's aluminum paint for the show.

* * *

A visitor at the booth of J. A. Campbell, natural gas engineer of Long Beach, Cal., remarked that the exhibit must have been designed by a psychologist instead of an engineer. The exhibit caught the eye quickly with its display of color, light and motion—everything a psychologist would suggest except possibly feminine beauty.

The center of Mr. Campbell's booth was a glass model of his "Oil-Froth" absorber for gasoline plants in which mineral seal oil was circulated by compressed air under conditions closely simulating those in actual commercial operation. On each tray was a colored electric globe to illuminate the frothing oil and give a clear view of the interior of the absorber.

This was the first showing of a model of the Campbell absorber in the Mid-Continent field and drew a great deal of attention.

* * *

A new lubricating oil dispensing tank for service stations was shown at the exposition by the Bennett Pumps Co. of Muskegon, Mich. The new tank is shown as the "Multiple Truss" lube tank.

* * *

A mud-spattered tank truck rolled into the exposition grounds last Saturday just as the International Petroleum Exposition was being officially opened. Except for the unusual lettering the truck looked much like any other tank truck.

Across the sides of the tank were the words "New York to San Francisco with capacity load". On the can racks were the words "General Motors Truck, powered by Buick Motor." On the cab door were the words "Cannon Ball Baker Driving."

The truck was the same in which the famous "Cannon Ball" Baker had only a few days previously set a new record for a transcontinental trip by truck. Baker had loaded the 550 gallon tank with salt water from the Atlantic ocean, and had made the 3,693 mile trip to the west coast in 137-3/5 hours elapsed time, an average of 26.838 miles an hour. He dumped the water from the Atlantic into the Pacific ocean at the end of the journey.

The truck was immediately headed toward Tulsa and the exposition, with J. H. Hickman, who had been observed on the record run, as driver. Hickman averaged around 34 miles an hour in order to reach here in time for the opening. The speedometer registered 6,554 miles upon the completion of its run to Tulsa.

In order to average 26 miles an hour elapsed time, Baker in his coast-to-coast trip at times clipped off from 50 to 65 miles an hour. On one stretch of highway Hickman in coming to Tulsa ran the speedometer up to 78 miles an hour, the truck traveling down grade and out of gear.

The tank was built by the Columbian Steel Tank Co. of Kansas City, and is equipped with Wheaton faucets, manufactured by A. W. Wheaton Brass Works, Newark, N. J.

* * *

A SERIES of brightly lighted tubes containing samples of Sunoco distilled oils were framed in red velvet in the center of the Sun Oil Co. booth. A. M. Ballard, district manager, A. F. Maxson, plant engineer, and C. E. Holt, salesman, who attended the booth spent their time telling customers of the new No. 87 distilled bright stock and the new No. 96 golden light blending oil which were announced earlier in the month.

* * *

The Phomene accumulator for fighting oil fires was displayed and demonstrated by the Pyrene Manufacturing Co. This apparatus, hooked up to a water line, automatically generates foam from a charge of dry powder and distributes the foam through pipes to the fire. Visitors were daily treated to a spectacle of a fire set off in a tank section being smothered with foam. A standard tank ring 25 feet in diameter was set in concrete with only a part of the side wall in place so the fire could be readily watched.

Over the top of the two sections of the tank sides were run two 2-inch pipes to carry the foam. These pipes branched from a 3-inch pipe from the accumulator. Well above the surface of the oil was also run a ¾-inch pipe, terminating in a standard sprinkler head. This ¾-inch line ran back to the automatic valve on the accumulator. When the oil in the tank was ignited the sprinkler head ruptured as the heat reached it. Simultaneous with this it seemed an alarm bell sounded signalling the automatic opening of the control valve on the accumulator. Within five seconds a thick smooth coat of foam was flowing over the blazing oil surface and about 20 seconds later the last flicker of flame died out as white foam blanket covered the oil completely.

* * *

THE Barndall Refineries. Inc., drew attention to its booth by featuring aviation with an airplane motor with propeller attached. At another point in the booth was a 15 year old motor cut away to show the good condition of its working parts as a result of thorough lubrication.

* * *

A new slide rule designed for refiners, blenders and compounders was displayed for the first time at the exposition by the C. J. Tagliabue Mfg. Co., manufacturers of scientific instruments. The rule is for the use of blenders of oils and gasolines both for gravity and viscosity.

* * *

Skelly Oil Co. caught the attention of visitors with a miniature refinery backed by a colored electric sign advertising Refractionated gasoline and Tagolene motor oils. The refinery was circled by a tiny electrically operated freight train carrying replicas of Skelly tank cars.

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The Marland Refining Co. provided easy chairs for the weary in its big booth which was backed by a replica of one of the company's big advertisements from the Saturday Evening Post.

* * *

The Mid-Continent Petroleum Corp. backed its long booth with brilliant red and gold diamond of velvet made up as a replica of the company's lubricating oil trade-mark. A group of young women dressed in diamond covered costumes passed out booklets to visitors.

Nebraska's Municipal Gasoline Station Before U. S. Supreme Court

By A. E. Heiss
N. P. N. STAFF WRITER

WASHINGTON, Oct. 1

THE question whether a municipality has the legal right to take taxpayers' money—some of it tax money paid by oil companies—to build municipal stations and go into the gasoline selling business in competition with oil companies, is to be decided by the United States Supreme Court.

The Standard Oil Co. of Nebraska has taken to this court the case it brought against the city of Lincoln, Neb., in 1925, in which it asked for a permanent injunction preventing the operation of the municipal gasoline station there. The state supreme court upheld the lower court and refused the injunction.

Municipal enterprises have flourished, for a time at least, in the atmosphere of Lincoln. Its first municipal gasoline station was begun by City Commissioner Hopkins in 1924. Gov. Charles Bryan opened a station when he was running for re-election in 1925. These early attempts were defeated by court action which denied the power of the city to build and operate stations. Then the city passed a special ordinance to give it that specific right. That ordinance is the one under fire now.

As far as is known this is the first time the Supreme Court has been called upon to pass on the issue of the right of public authorities to sell such a commodity as gasoline, except where an emergency condition existed or was claimed to exist. There have been cases upheld by the courts where public authorities engaged in what is usually called private business and were upheld by the high court because an emergency existed. The Lincoln statute provides for the city selling gasoline at any and all times. Because of the great public interest relatively early argument is expected in the case, which is styled No. 91, Standard Oil Co. and Claude E. Shamp, a gasoline retailer, vs. City of Lincoln, Neb.

In the bare possibility of the court of last resort sustaining the supreme court of Nebraska lies the possibility of a complete revolution in America of ideas as to what constitutes private business and what constitutes public purpose. Very few think the court will uphold the decision of the Nebraska court. However, the Supreme Court of the United States, more than once, has upheld state supreme courts when the latter have construed socialistic legislation by drawing distinctions not obvious to a layman.

The Law in Question

This is the amendment to the charter of Lincoln, Neb., the United States Supreme Court will pass upon as to its constitutionality:

"The city council shall have power to engage in the business of selling gasoline and oil to the inhabitants of the city, both at retail and wholesale, and for that purpose shall have power to acquire and own such real and personal property as may be necessary and incident thereto. The city shall not charge for gasoline and oil sold by it, more than the cost thereof to the city, plus the cost of handling the same, including contingencies."

The plaintiffs in error, Standard and Shamp, allege that because the city of Lincoln under an amendment to its charter is using property of the city created by the use of tax money to conduct a petroleum products selling business in Lincoln, that this city is taking their money without "due process of law" in violation of the fourteenth amendment to the constitution of the United States, which says taxes can be levied and public money expended only for public purposes or uses.

BY INFERENCE, the Standard and Shamp admit that, if it were very difficult or impossible for the citizens of Lincoln to obtain petroleum products, if there were a monopoly in the selling of such products, or an agreement about prices, there might be an emergent condition warranting the use of city property and city money for this purpose.

But they contend the city admits there is no emergency or any peculiar conditions making it very difficult or impossible for people in Lincoln to obtain gasoline or any other petroleum product through ordinary channels. They assert that, when the city of Lincoln demurred to the petition they filed in the Nebraska courts, it admitted there were no facts or conditions such as they contend had to exist before there was warrant for the city establishing a filling station.

The Nebraska courts decided that Lincoln did not take money from the petitioners without "due process of law" when it used city property and city money to go into the business of retailing petroleum products, although, under the law, the city must sell at cost and, if it obeys the law and its filling station is efficiently managed, the Standard and Shamp, as well as other sellers of petroleum products, will be rendered bankrupt and lose all the money they have invested in their business, since they must do more than sell at cost.

THIS question, in the precise form brought forward by this case, has never before been presented to the Supreme Court of the United States. In other words, that form of arrested development, self-styled as progressivism, has never gone so far as to bring to the court a case in which a state or city, without even the pretense of an emergency condition warranting departure from general rules, has used tax money, some of it taken from the class to be hurt, as capital for carrying on a private business, under the pretense that such business was for a public purpose or a public use.

Attorneys for the Standard and Shamp, in their brief on the subject, assert "there is presented to the court the question whether, under the due process clause of the fourteenth amendment to the federal constitution, it is competent for a city to engage in the business of selling, in competition with is own citizens—gasoline and oil at cost to its inhabitants, using and expending therefor public property and public money raised by taxation; it being admitted that in the defendant city there is no shortage of supply, actual or threatened; no monopoly, but numerous dealers both at wholesale and retail; no combination or agreement fixing prices but actual and active competition between said dealers, and no emergency, whereby it is difficult, much less impossible, for the individual to obtain an adequate supply of gasoline and oil from private sources. It is admitted, also, that there never has been in said city a shortage of supply, actual or threatened; or a monopoly;

or a combination or agreement fixing prices. Likewise it is admitted that prices are now and always have been reasonable in said city."

Further the plaintiffs assert the supreme court of Nebraska based its opinion upholding the power on the sole ground "that gasoline has become one of the indispensable commercial commodities of our time." From that the court jumped to the conclusion that "it follows that a commodity of use so universal may come within the purview of 'public purpose' as distinguished from 'private purpose'." By the same sort of reasoning, the attorneys point out, anything could be brought under the "public purpose" rule without the slightest pretense that conditions were abnormal or subnormal, which constitute the reason for the rent fixing and other price-fixing laws which were enforced in the war emergency period, not because the legislative power asserted there were emergency conditions, but because, as a result of judicial process, it was found, as a fact, that there were emergency conditions.

THE plaintiffs admit that Jones vs. Portland, 245 U. S. 217 and Green vs. Frazier, 253 U. S. 233, are cases in which the state went into businesses, with public money, which are usually regarded as private and that, in so doing, the court of last resort upheld such legislation as not contrary to the constitution of the United States. In each of those cases, however, there was an emergency condition such as was not even alleged to exist at Lincoln.

In the Green vs. Frazier case, the supreme court held the Non-Partisan League legislation of North Dakota not repugnant to the constitution because of the peculiar conditions in that state, in which the principal industries of the state were prostrate and conditions were such that ordinary methods for reviving them did not appear potent enough. The supreme court of that state pointed out those peculiar conditions at great length. The highest court said that, "under the peculiar conditions existing in North Dakota . . . we are not prepared to say that it is within the authority of this court, in enforcing the observance of the fourteenth amendment, to set aside such action by judicial decision."

One court decision in the United States upholds the supreme court of Nebraska. That one case is Holton vs. Camilla, 134 Ga. 560, 68 S. E. Rep. 472. In that case the highest court of Georgia sanctioned the use of public money for the establishment of an ice plant on the theory that, because ice was simply frozen water, the municipality might make ice inasmuch as it was empowered to furnish a water supply.

Courts of other states, in the vernacular, have razzed the Georgia court unmercifully on account of the frozen water decision. The supreme court of Wisconsin, in State ex rel. Mueller vs. Thompson, 149 Wis. 488, 137 N. W. Rep. 20, took a dig at the Camilla case. It observed that "things which are similar from a physical or chemical viewpoint may be dissimilar from a legal viewpoint. Under a statute authorizing a city to buy coal, it probably could not buy diamonds, although it is said they are chemically identical. Neither is atmospheric gas passed through a varying aperture and articulated by varying contacts always equivalent to argument." After that shot about what is usually called hot air, the Wisconsin court was at pains to point out the difference between furnishing water through pipes laid in the streets and furnishing ice by delivery by wagon, just to show the ludicrousness of the Camilla decision.

The Louisiana supreme court, in breaking up a municipal ice plant project in that state, declared that the Georgia court, seemingly with design, ignored the constitutional and common law questions involved, so as seemingly to base its decision on the police power of the state, leaving it to be inferred that it approved the ice plant proposition on the ground of public health, without saying so.

Perfect Score Wins First Place for Empire Team in First Aid Meet

TULSA, Sept. 30

WITH a perfect score of 600, the first aid team of the Empire Oil & Refining Co., Cushing, Okla., won first place in the third annual Mid-Continent Petroleum First Aid Meet on the opening day of the International Petroleum Exposition. As a reward for the team's perfect work in solving three problems it was presented with a mammoth silver cup. In addition each member of the team was presented with a $20 gold piece and a gold medal by the Petroleum Safety Council of the Mid-Continent Oil & Gas Association.

The crack team of the Marland Refining Co. of Ponca City, Okla., was barely nosed out of first place by the Empire men. The Marland team trained by Ray Miller, former director of the safety council, finished with a score of 599 out of a possible 600. Each member of this team was presented with a silver medal and an auto first aid kit. The kit was presented by the Mine Safety Appliance Co. of Pittsburgh.

A fourth problem was necessary to settle a tie for third place. On the first three problems the team of the Skelly Oil Co.'s gasoline plant at Burbank was tied with the Burbank team of the Sinclair Oil & Gas Co. Both teams had a score of 598, only two points behind the winner of the first prize.

A severe problem of first aid was given to settle the tie. Each team was told that the patient to be treated was a tooldresser who had been caught in bull ropes causing his left foot to be crushed, breaking several bones, three of which protruded through the skin of the upper foot. The patient likewise was supposed to have a lacerated wound on the scalp, his right elbow dislocated and to be unconscious as a result of the severe shock. In the working time of 9 minutes the Sinclair team topped the Skelly group by a small margin to win bronze medals.

Following is the standing of the teams:

Team	Score
1. Empire Oil & Refining Co., Cushing	600
2. Marland Refining Co., Ponca City	599
3. Sinclair O. & G. Co., Burbank	598
4. Skelly Oil Co., Burbank	598
5. Gypsy Oil Co., Tonkawa	597
6. Skelly Oil Co., El Dorado, Kan.	596
7. Louisiana O. & Ref. Corp., Shreveport—Tie	594
7. Transcontinental Oil Co., Bristow—Tie	594
8. Humble Oil & Ref. Co., Baytown—Tie	592
8. Phillips Pet. Co., Wetumka —Tie	592
9. Mid-Cont. Pet. Corp., Tulsa —Tie	588
9. Roxana Pet. Corp., Arkansas City—Tie	588
10. Empire Oil & Ref. Co., Okmulgee—Tie	585
10. Empire Oil & Ref. Co., Ponca City—Tie	585
11. Tidal Ref. Co., Brumright	565

Members of the first place Empire team include, John H. Acker, captain; W. H. Craig, O. F. Taylor, Carl Humphreys, W. E. Thomas and Valnes Young.

The Marland team consisted of R. A. McGrew, captain; Lester Johnson, Warner Hendrickson, C. B. Loban, Joseph Yadon, and W. E. Burns.

Members of the Sinclair team were Ben Weatherman, captain; James Parker, Sidney Stevens, William Earnhart, B. Thomasson and Jess Smith.

Refining and Storage Properties Limit Effect of West Texas Crude

By Paul Wagner

N. P. N. STAFF WRITER

HOUSTON, Oct. 1

DECISION of Pecos county operators to restrict Yates field production to marketable quantities of oil reflects their realization that stored crudes of high sulfur content from west Texas fields can be carried only at excessive costs and that stocks accumulated now in the region are destined to remain a dead weight on their owners for years.

In addition to recognized economic questions confronting that part of the producing industry which operates in west Texas there is the serious problem of sulfuric acid corrosion of tanks and equipment to be dealt with in connection with large-scale storage programs.

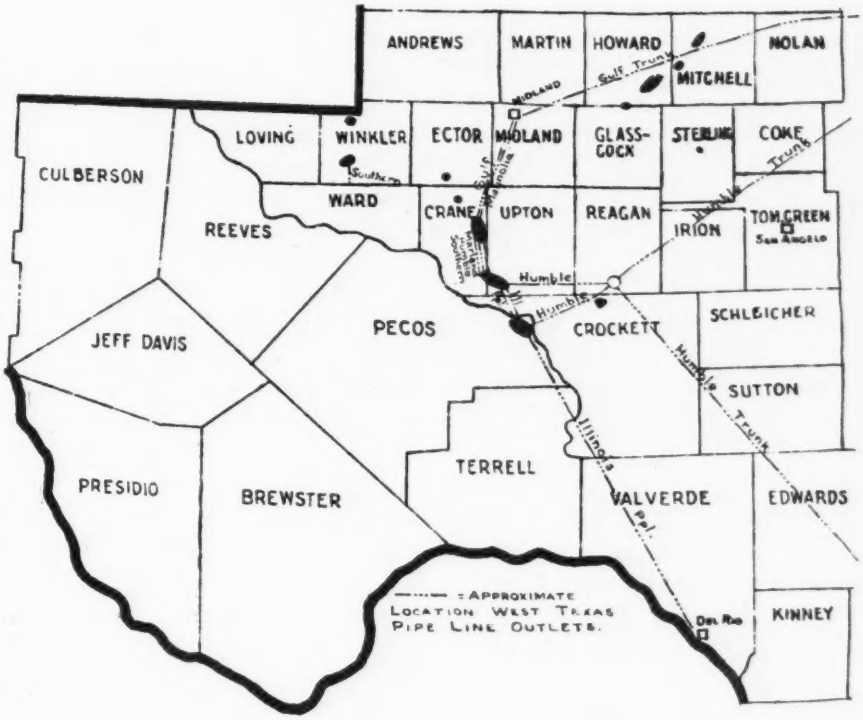
Hydrogen sulfide gas produced with the oil, or sulfuric acid caused by the contact of highly impregnated sulfur crude with the oxygen in water or air, brought about a west Texas storage situation that has taxed the ingenuity of field operators to solve the problem of corrosion.

Experience in the University (Church & Fields) area of Crane county and the McCamey district of Upton county has indicated to west Texas operators that the life of steel storage in the region is from three to five years, due to the corrosive action of the hydrogen sulfide gas and the sulfur in the oil.

Humble Oil & Refining Co., which owns a large tank farm at Kemper station, its concentration base for west Texas crude oil shipments via pipe line to Comyn and Ingleside, was compelled to renew tops on its tankage in two years. Kemper storage has consisted mainly of Big Lake crude produced in Reagan county, which is lower in sulfur content than most of the oils from other west Texas fields.

Replacement of tops on storage tanks resulted in a return to the use of wood covers for this territory, notwithstanding the Humble's general policy of building gas tight tankage to prevent evaporation and the lowering of gravities through partial weathering of crude. Elsewhere in the sulfur crude producing territory it has been indicated that after the usable life of tankage there will be little if any salvage of this type of material.

A generally accepted figure in the southwest for tankage construction cost is 50 cents a barrel; the carrying cost of crude is estimated to average 25 cents a barrel a year, including depreciation, interest and other proper charges.



Because of geographical location of the field and conditions of depreciation it is conceivable that Yates crude might cost even more to store and hold above ground. Besides, it is apparent that future development in the west Texas general area will be such, for a period of years, as to fill available trunk pipe line outlets with current production; thus creating a condition under which stored oil certainly will become "dead" stocks in the territory.

HAD Yates field operators elected to drill indiscriminately and store the resulting outpour of crude at adjacent tank farms they would have found themselves at the end of a year in the position of paying 25 per cent more for tankage and carrying costs than the present market price of 60 cents a barrel for the oil.

These common-sense business calculations, coupled with refining difficulties and other drawbacks discussed elsewhere in this article, were sufficient to cause decision for prorating Yates crude to the quantity the market will absorb currently; over and above these considerations, however, the industry in west Texas and elsewhere will benefit because of the policy adopted to offset immeasurable over-production that would have created further weight on an already depressed crude market structure.

Some students of the market structure foresee a return to better times in the possible decline of "sweet" crude production in 1928, basing their forecasts on the assumption that the Seminole, Okla., district will be out of the way next year as a dominating influence for low prices. Had indiscriminate drilling been allowed to bring Yates field crude yields to daily averages that conceivably might have reached anywhere from 320,000 to 500,000 barrels then there could have been no hope for better markets, despite the relatively undesirable properties of the oil.

Whether fresh discoveries will materialize in the general area for which the present Seminole district is the most important kind of an indicator is a question the writer will not attempt to discuss now. Upon their discovery and development will depend, however, the constancy or decline of important "sweet" crude production in the immediate future in the Oklahoma-Kansas region. Their failure to materalize, coupled with measurable declines in the present Seminole area, conceivably might bring

about a scramble for "sweet" crude that would turn the market upward to more favorable levels so long as such pressure as west Texas could provide is avoided.

It is conceivable that a need for "sweet" crude might bring about more favorable market conditions, affecting both raw and finished materials, in the face of an apparent increase in overall storage stocks of petroleum and its products of more than 100,000,000 barrels in 1927. At the end of seven months, overall storage had increased more than 50,000,000 barrels to its second record-breaking total in 1927. The total then stood at a figure in excess of 570,000,000 barrels as compared with 519,514,858 barrels at the beginning of the year; and little hope is expressed by students of conditions generally that the figure will be less than 620,000,000 barrels at the beginning of 1928.

OPERATORS familiar with Smackover heavy oil development recall that the south Arkansas outpour, which set a field record for high daily average production prior to Seminole, failed to create more than a ripple in the light oil markets of its time. True, Smackover oil had a much lower gasoline content than west Texas crude, but it cracked readily in the big plants equipped to handle it and it did not have the hydrogen sulfide characteristics of present production in the general territory west of San Angelo.

Smackover heavy crude fell to 40 cents a barrel for the posted market and distress oil sales were made in tank car shipments to fuel purchasers at lower prices. The crude was adaptable as a fuel in the condition it came from the well; the 20 per cent, or more, gasoline content of west Texas crude makes topping necessary before marketing the residue as fuel. West Texas freight rates are unfavorable as compared with Smackover and the peculiarities of refining practice that apply to crudes from the territory west of San Angelo, will generally prevent advantageous building of plants adjacent to development areas.

The true yardstick of the general industry's raw material demand recognizes the necessity of a market outlet for fuel residue from low grade crudes after topping off the 20 to 25 per cent gasoline content in such sulfur-impregnated oils.

Whether these crudes may be cracked advantageously, as in the case of fuel grades with negligible sulfur contents, the future must show. Their use under the best of conditions would entail operating expense in excess of normal cracking costs, which in 1927 did not warrant certain major interests to run pressure still equipment.

West Texas sulfur crude, in the meantime, must move almost exclusively into channels provided by companies that own tankship fleets or maintain large scale commercial relations with other interests that operate them. It was previously pointed out in these columns that north Texas and Oklahoma-Kansas skimming plants were not equipped to handle this crude advantageously in tank car shipments through railroad loading racks, no matter what the field price.

THE desirability of refining west Texas crude is steam stills and the necessity of treating and retreating the gasoline to make it marketable will prevent any extensive purchase of the oil at distress prices such as prevailed at Cushing and Burkburnett.

An only alternative, then, is for flush quantities of crude to be moved to seaboard, mainly through outlets to be provided by major purchasing interests. There it will be used in plants to be erected for handling crudes of such peculiar refining qualities or it will be moved in tankship traffic to plants built for running heavy Mexican oils, which are similar in many respects.

Until subsidiaries of the Standard Oil Co. of Indiana and the Ohio Oil Co. build pipe line facilities to seaboard it is not apparent that trunk outlets for crude from the salt basin region will include others than the Gulf and Humble companies, with the possible exception of the Magnolia.

Gulf now serves its own properties in the McElroy ranch and the University (Church & Fields) areas of Crane county with a pipe line to Midland, which connects with a trunk system via Ranger and Wortham to Lufkin and thence Port Arthur. Feeders will eventually connect the Yates field, McCamey district and the Winkler county area with the Gulf's west Texas system, but the company's policy is to serve its own properties and not to purchase outside oil.

Magnolia is building an 8-inch pipe line from the University field to Midland and eventually may follow the Texas & Pacific railroad east with a trunk connection to its existing system in the Ranger territory at Olden, Eastland county.

SOUTHERN PIPE LINE CO., companion corporation to the Southern Crude Oil Purchasing Co., is known to have preliminary surveys made for a pipe line system that would extend from the Hendricks field, in Winkler county, via the McCamey district, to the Gulf of Mexico, probably at Ingleside. The parent Pan American Petroleum & Transport Co., now under control of Standard of Indiana, could provide fuel outlets to world markets and the building of the Southern's proposed line is generally considered logical.

The "Man-in-the-Street" in Texas generally foresees in the Southern's dilatory steps toward trunk pipe line construction a possible alignment of the parent interests with Ohio Oil Co. for the joint construction of a major system or the extension of the Ohio's facilities now under way, so as to provide outlets for production of the Standard of Indiana arms through working relations.

Ohio Oil's producing subsidiary, Mid-Kansas Oil & Gas Co., is the principal operator in the Yates pool of Pecos county and its allied transportation company, the Illinois Pipe Line Co., expects to complete next month an 8-inch 140-mile line from the Yates field to a 2,000,000-barrel tank farm under construction near Del Rio, on the Southern Pacific railroad.

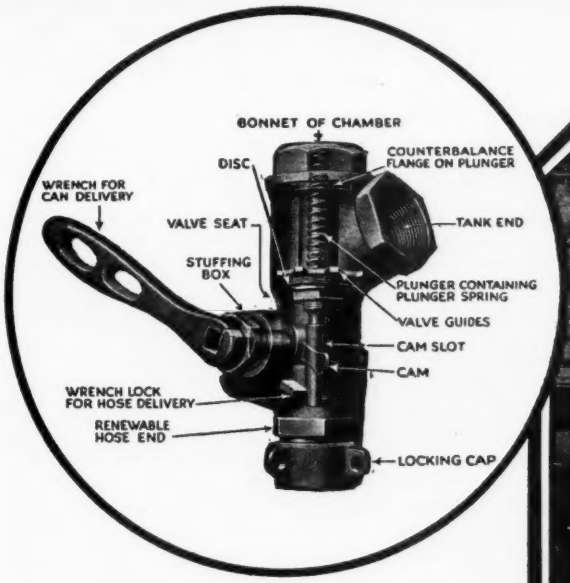
It would be a relatively simple matter for Illinois Pipe Line Co., either in partnership with the Standard of Indiana interests or under contract conditions, to hook up northwest to Winkler county and extend southeast to the Corpus Christi bay district at Ingleside.

PIPE line transportation tariffs provide an assured earning as compared with losses in other branches of the industry in periods of depression. Standard of Indiana, through Pan American, could provide a market outlet for production of the subsidiaries of itself and the Ohi Oil Co., both to seaboard refineries and the world fuel markets. Neither interest could expect to obtain such a market through either the Gulf or the Magnolia and only to a limited extent through the Humble.

The Humble, whose west Texas facilities will provide outlet for 90,000 barrels of crude daily after Oct. 1, next, allocated 30,000 barrels daily to the Yates pool, the production of which President W. S. Farish asked the producers to prorate among themselves, appointing an umpire if necessary. Humble has long term contracts for 20,000 barrels daily from the Big Lake field, Reagan county. It has a contract with Marland for McCamey district crude and University field contracts with other producers that will total 15,000 to 20,000 barrels daily, in addition to the properties it serves as a common purchaser in the several districts.

It becomes apparent, therefore, that the Ohio Oil, through its subsidiary, Mid-Kansas Oil & Gas Co., cannot expect to move through the Humble more than a prorata of Yates field production under its purchase offer of 30,000 barrels daily, plus 5,000 barrels daily of contract oil the Mid-Kansas has been selling to Humble for some months past.

Analysis of this situation, plus the knowledge that Standard of Indiana



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has purchased Rocky Mountain crude for years from the Ohio Oil Co., together with Southern's dilatory attitude toward trunk pipe line construction, results in the "Man-in-the-Street" forming his own conclusion about a possible alignment which may or may not materialize.

Mid-Kansas officials are credited with statements recently that they would create their own market outlets for Yates field crude; and the parent company is powerful enough, both in operating strength and present financial status, to take whatever administrative and operating position it chooses. Since, however, it owns no seaboard terminals, refineries or tank fleets with which to participate in world markets, it will be necessary for Ohio Oil and its subsidiaries to reach working relations with some interest that does, in order to begin functioning soon in this regard.

AN ACCOMPANYING map shows roughly the course of the Gulf's trunk pipe line northward from the McElroy ranch and University fields of Crane county to Midland, thence easterly to junction with its earlier system serving the Ranger territory, and it shows also the general course of the Humble's two trunks, one northeasterly from Kemper station, Reagan county, to junction with its original system at Comyn, Comanche county, and the other extending southeasterly to Ingleside, on the Gulf Coast.

Southern's short line from the Hendricks field, Winkler county, extends to tank car loading racks on the Texas & Pacific railroad, but plans call for its connecting with a gathering system in the Crane and Upton county areas. There the Southern's field system could be tied-in with Illinois Pipeline Co.'s. Yates-to-McCamey double line, and the Yates-To-Del Rio line might be looped and extended on to the Gulf Coast, assuming the conclusions of the "Man-in-the-Street" to be worthy of consideration.

Gathering lines serving limited production of the Roxana, Texas and Marland companies in the Crane-Upton areas connect with tank car loading racks of the companies named, but the Marland interests make no railroad shipments since contracting oil they gather to the Humble several months ago.

LOS ANGELES—E. W. Clark, executive vice president of the Union Oil Co., also president of the American Petroleum Institute, attended the conservation meeting of the Institute directors at Colorado Springs early in September, proceeded to New York and will take a few weeks vacation before returning to headquarters at Los Angeles. Mr. Clark was accompanied by his wife.

Oil Companies to Help in Study Of Gas Function

TULSA, Sept. 24

INVITATIONS to participate in the organized study of the value of natural gas in the conservation and production of petroleum have been sent by Dr. W. P. Haseman, director of research for the Marland Oil Co., to about 20 oil companies in Oklahoma and Kansas. Dr. Haseman took this action as regional chairman for that district, pursuant to his appointment to that office by the American Petroleum Institute gas conservation committee, which met in Colorado Springs, Sept. 12 and 13.

Three other regional chairmen were appointed and are proceeding in the same manner in the collection of data as is Dr. Haseman. The others are M. E. Lombardi, in charge of production for the Standard Oil Co. of California; Max W. Ball, Denver, for the Rocky Mountain territory and John R. Suman, director in charge of production for the Humble Oil & Refining Co., chairman for the Texas and Louisiana territory. Earl Oliver, petroleum engineer, Ponca City, is general secretary for the study.

Dr. Haseman called a preliminary meeting Sept. 23, in Ponca City, and invited the companies addressed to send representatives. In his letter he reviewed the steps that led up to the Colorado Springs meeting. Of the latter he said:

"This meeting had a very excellent attendance. Perhaps at no other meeting of the industry to this date has there been such a completely frank and open discussion of the present knowledge or limitation of knowledge of the functions of natural gas in the production of oil—all of which developed the perhaps unanimous opinion that, while natural gas is believed to play a very important part in the production of oil, yet remarkably little is known about its exact functions and best means of utilization; also that it is highly important to the industry that a more thorough study be instituted and the facts therein developed be made available to guide the industry in its present stage of evolution.

"IT WAS also recognized that, because of the necessarily cooperative manner in which the application of gas to the production of oil must be handled, no particular advantage is attained to any one company in retaining to itself knowledge about the functions of gas, since the same could not be applied unless like knowledge and opinions are held by others whose cooperation is sought. This information differs, for instance, from knowledge of improved geological methods whereby one company might have advantages over another by keeping its information to itself.

"It appears clear that the greatest good to the individual company can be accomplished only in proportion to the knowledge regarding the function of gas being widely disseminated, so that there may be unanimity of opinion as to the best methods of applying it. Consequently it was readily agreed by the companies present that they would lend their technical experts and supply their technical data for the purpose of making a comprehensive study of this problem; that they would lay the same before the industry generally and before the Institute in particular."

IT IS the intention to organize a working committee in each of the four regions, such committees to spend their entire time for the next four or six weeks in compiling and analyzing the date obtained. A chairman probably will be appointed for the Appalachian region. It was decided at Colorado Springs to enlist the aid of scientists outside the industry. The four regional sub-committees will meet in Ponca City, Oct. 17, and two days later they will be joined by the A.P.I. conservation committee.

"It is expected that the present study will only be the beginning of a very extensive one," wrote Dr. Haseman. "Because of the short time in which to get this preliminary matter in hand, it will be impossible to enlist at this time all those who might be helpful. But the study is by no means a closed one; helpful suggestions and data from all sources will be welcomed."

CHICAGO.—A business trip took J. D. Manley, of the American Mineral Spirits Co. here, to Wichita Falls, Tex., the week of Sept. 19. While there, Mr. Manley went on a fishing trip, accompanied by James H. White, producer, W. C. Duncan, Plains Gas & Fuel Co., Inc., and by W. B. Richardson, Cities Service Oil Co. The fishing was done at Lake Kemp.

LOS ANGELES—H. H. Maxson, for several years secretary-manager of the Independent Petroleum Marketers Association of California, has about concluded his work of closing up the affairs of the association, and has accepted a position as district credit manager at Los Angeles for the General Petroleum Corp.

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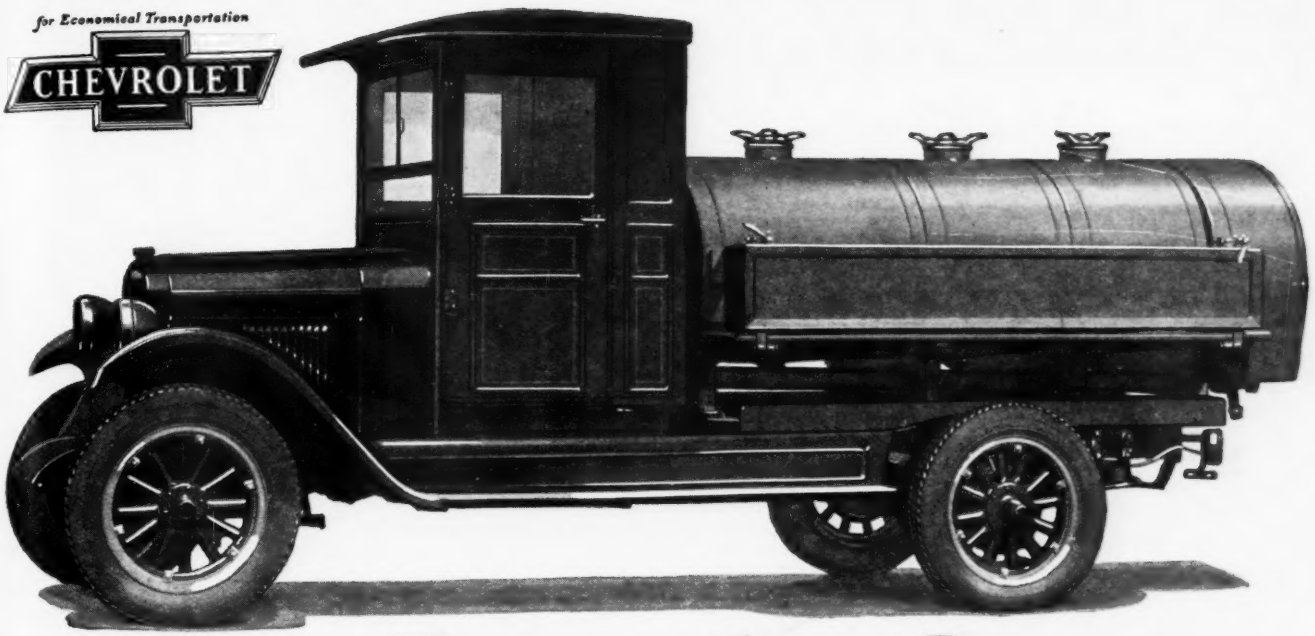

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Compilation Of Mid-Continent Refinery Operations

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Mid-Continent Refinery Operations Week Ended September 30 (By Telegraph)

	Kansas	Oklahoma	North & Cent. Texas	North La.-Ark.	Total Week Ended Sept. 30	Total Week Ended Sept. 2
Plants Reporting	23	46	41	14	124	124
Crude Capacity (bbls.)	106,200	165,900	144,300	53,700	470,100	470,100
Cracking Capacity	29,000	45,800	15,750	20,200	110,750	110,750
Da. Av. Crude Runs	51,787 — 10.2	114,577 — 3.5	63,165 + 5.3	40,864 — 13.1	270,393 — 4.5	285,670
Da. Av. Other Oils	5,146 — 20.3	5,838 +729.3	6,090 — 3.6	1,039 — 48.3	18,113 + 16.9	18,180
GASOLINE—Gallons						
Stocks, Sept. 24	6,095,000	30,371,000	15,575,000	2,737,000	54,778,000	69,897,000
Prod. 9-24 to 10-1	8,088,000 — 7.9	18,008,000 — 5.8	7,635,000 + 0.1	3,637,000 — 12.0	37,368,000 — 5.8	37,973,000
Ship. 9-24 to 10-1	7,933,000 — 7.2	17,428,000 — 17.0	5,959,000 — 17.9	3,789,000 + 6.2	35,109,000 — 13.0	43,494,000
Stocks, Oct. 1	6,250,000 + 2.5	30,951,000 + 1.9	17,251,000 + 10.8	2,585,000 — 5.6	57,037,000 + 4.1	64,376,000
Ratio Sales to Prod.	98.1%	96.8%	78.0%	104.2%	94.0%	114.5%
KEROSENE—Gallons						
Stocks, Sept. 24	3,418,000	4,496,000	1,430,000	548,000	9,892,000	10,996,000
Prod. 9-24 to 10-1	1,219,000 — 22.8	3,166,000 + 13.8	1,288,000 + 17.3	683,000 + 46.9	6,356,000 + 7.3	5,965,000
Ship. 9-24 to 10-1	1,596,000 + 4.6	2,856,000 + 43.1	1,222,000 — 6.1	528,000 + 54.5	6,202,000 + 20.0	6,626,000
Stocks, Oct. 1	3,041,000 — 11.0	4,806,000 + 6.9	1,496,000 + 4.6	703,000 + 28.3	10,046,000 + 1.6	10,335,000
Ratio Sales to Prod.	130.9%	90.2%	94.9%	77.3%	97.6%	111.1%
STOVE DISTILLATE—Gallons						
Stocks, Sept. 24	4,956,000	7,552,000	1,795,000	84,000	14,387,000	12,523,000
Prod. 9-24 to 10-1	385,000 — 9.4	1,021,000 + 14.6	334,000 + 21.0	35,000 — 48.5	1,775,000 + 6.9	1,792,000
Ship. 9-24 to 10-1	539,000 + 66.4	909,000 + 78.9	350,000 — 50.7	103,000 + 51.5	1,901,000 + 18.1	1,139,000
Stocks, Oct. 1	4,802,000 — 3.1	7,664,000 + 1.5	1,779,000 — 0.9	16,000 — 81.0	14,261,000 — 0.9	13,176,000
Ratio Sales to Prod.	140.0%	89.0%	104.8%	294.3%	107.1%	63.6%
GAS OIL—Gallons						
Stocks, Sept. 24	8,642,000	40,905,000	16,881,000	9,640,000	76,068,000	74,795,000
Prod. 9-24 to 10-1	1,817,000 + 11.7	2,451,000 + 32.1	737,000 — 38.3	1,506,000 — 19.0	6,511,000 — 0.4	7,082,000
Ship. 9-24 to 10-1	2,285,000 + 14.4	2,160,000 + 89.1	853,000 — 37.5	2,662,000 + 28.4	7,960,000 + 21.0	7,232,000
Stocks, Oct. 1	8,174,000 — 5.4	41,196,000 + 0.7	16,765,000 — 0.7	8,484,000 — 12.0	74,619,000 — 1.9	74,645,000
Ratio Sales to Prod.	125.8%	88.1%	115.7%	176.8%	122.3%	102.1%
FUEL OIL—Gallons						
Stocks, Sept. 24	15,606,000	45,025,000	33,569,000	9,734,000	103,934,000	98,962,000
Prod. 9-24 to 10-1	5,301,000 — 9.4	7,281,000 — 15.4	8,002,000 — 2.0	5,298,000 — 21.4	25,882,000 — 11.9	28,604,000
Ship. 9-24 to 10-1	5,563,000 + 26.3	6,562,000 — 4.7	8,354,000 + 7.1	4,188,000 — 34.8	24,667,000 — 3.3	28,222,000
Stocks, Oct. 1	15,344,000 — 1.7	45,744,000 + 1.6	33,217,000 — 1.0	10,844,000 + 11.4	105,149,000 + 1.2	99,344,000
Ratio Sales to Prod.	104.9%	90.1%	104.4%	79.0%	95.3%	98.7%

Gasoline Produced by Various Methods, Week Ended September 30

	Kansas	% of Total	Oklahoma	% of Total	Texas	% of Total	Louisiana-Arkansas	% of Total	Total	% of Total
Straight Run	5,150,000	63.7	13,786,000	76.5	6,067,000	79.5	1,763,000	48.5	26,766,000	71.6
Cracked	2,406,000	29.7	3,036,000	16.9	1,258,000	16.5	1,538,000	42.3	8,238,000	22.1
Natural	532,000	6.6	1,186,000	6.6	310,000	4.5	336,000	9.2	2,364,000	6.3
Total	8,088,000		18,008,000		7,635,000		3,637,000		37,368,000	

+ or — columns are changes over previous week.

Gasoline Stocks Gain; Sharp Drop in Shipments

Staff Special By Telegraph

STOCKS of gasoline at 124 Mid-Continent refineries, representing about 60 per cent of the operating capacity of the field, were increased 2,250,000 gallons during the last week of September, according to reports gathered by NATIONAL PETROLEUM NEWS. Total stocks at the close of the week was 57,037,000 gallons as compared with 54,778,000 gallons of Sept. 23.

The increase in gasoline stocks was the result of a sharp drop in gasoline shipments from the high level established earlier during the month. Shipment for the week ending Sept. 30 totaled 35,109,000 gallons, as compared with 40,367,000 gallons for the week ending Sept. 23. This was a drop of a little over 5,000,000 gallons, or 13 per cent.

In line with the reduction in shipments, refiners made a cut in their

Summary for the Month

Production and shipments, all reporting refineries, for four weeks ended Sept. 30. Changes in stocks figured from Sept. 2.

GASOLINE

	Gallons
Production	153,170,000
Shipments	160,509,000
Net change in stocks	—7,339,000
Ratio sales to production	104.8%

KEROSENE

Production	25,468,000
Shipments	25,757,000
Net change in stocks	—289,000
Ratio soles to production	101.1%

STOVE DISTILLATE

Production	6,663,000
Shipments	5,578,000
Net change in stocks	+1,085,000
Ratio sales to production	83.7%

GAS OIL

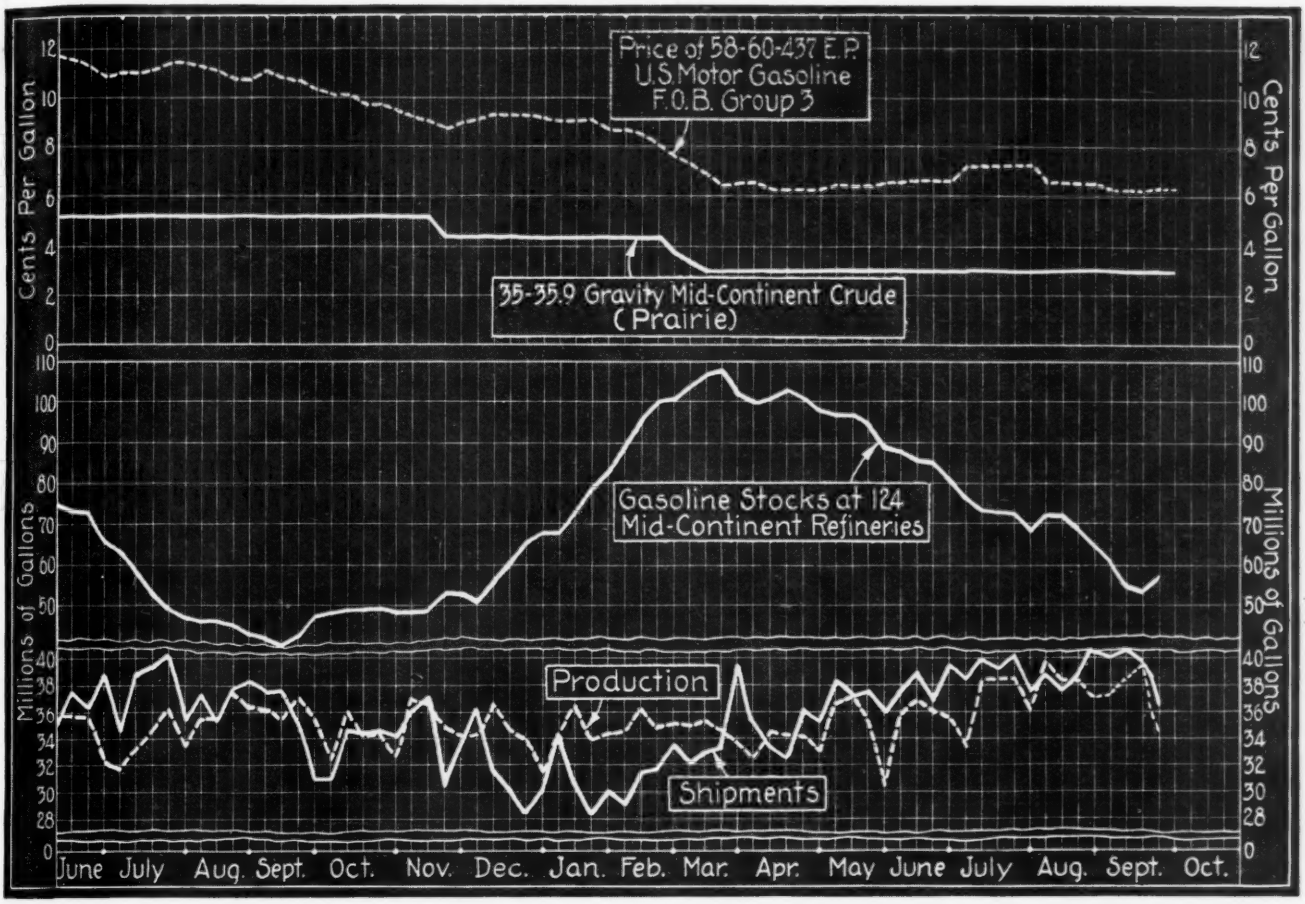
Production	28,129,000
Shipments	28,155,000
Net change in stocks	—26,000
Ratio sales to production	100.1%

FUEL OIL

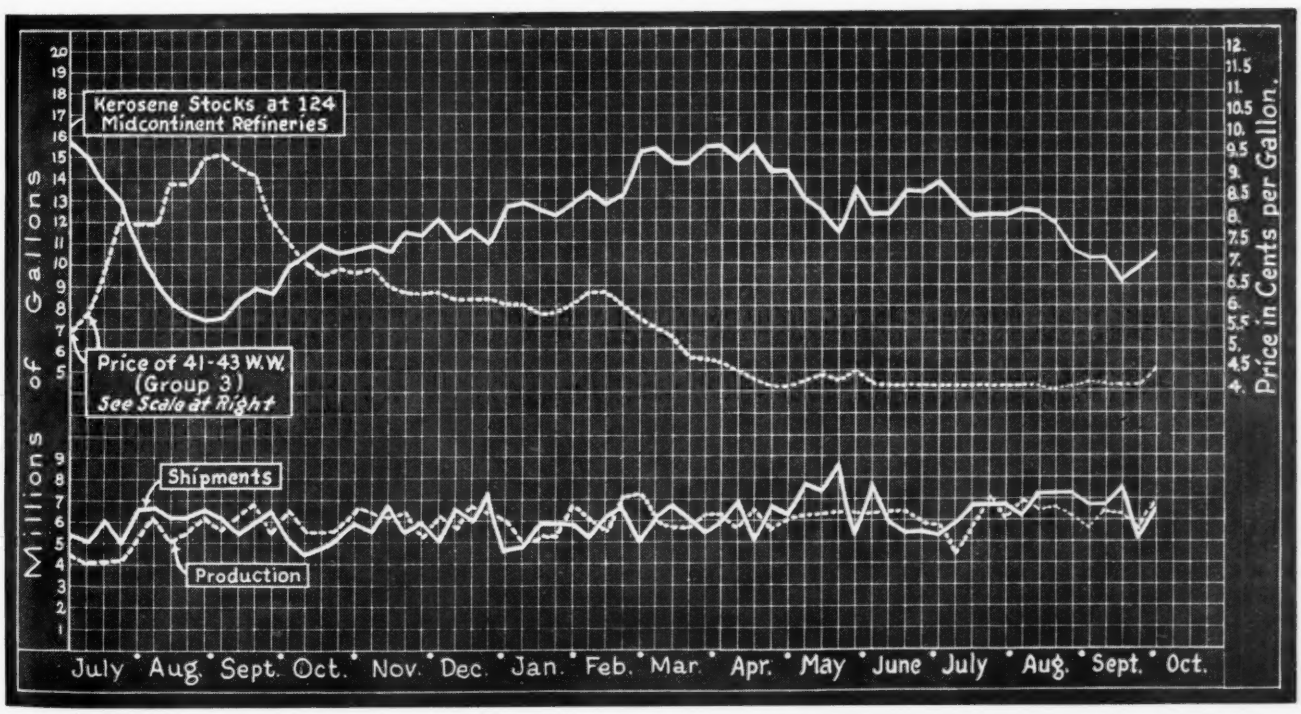
Production	112,155,000
Shipments	106,350,000
Net change in stocks	+5,805,000
Ratio sales to production	94.8%

Barometer of Mid-Continent Refinery Market—Week Ending September 30

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 124 Plants to National Petroleum News

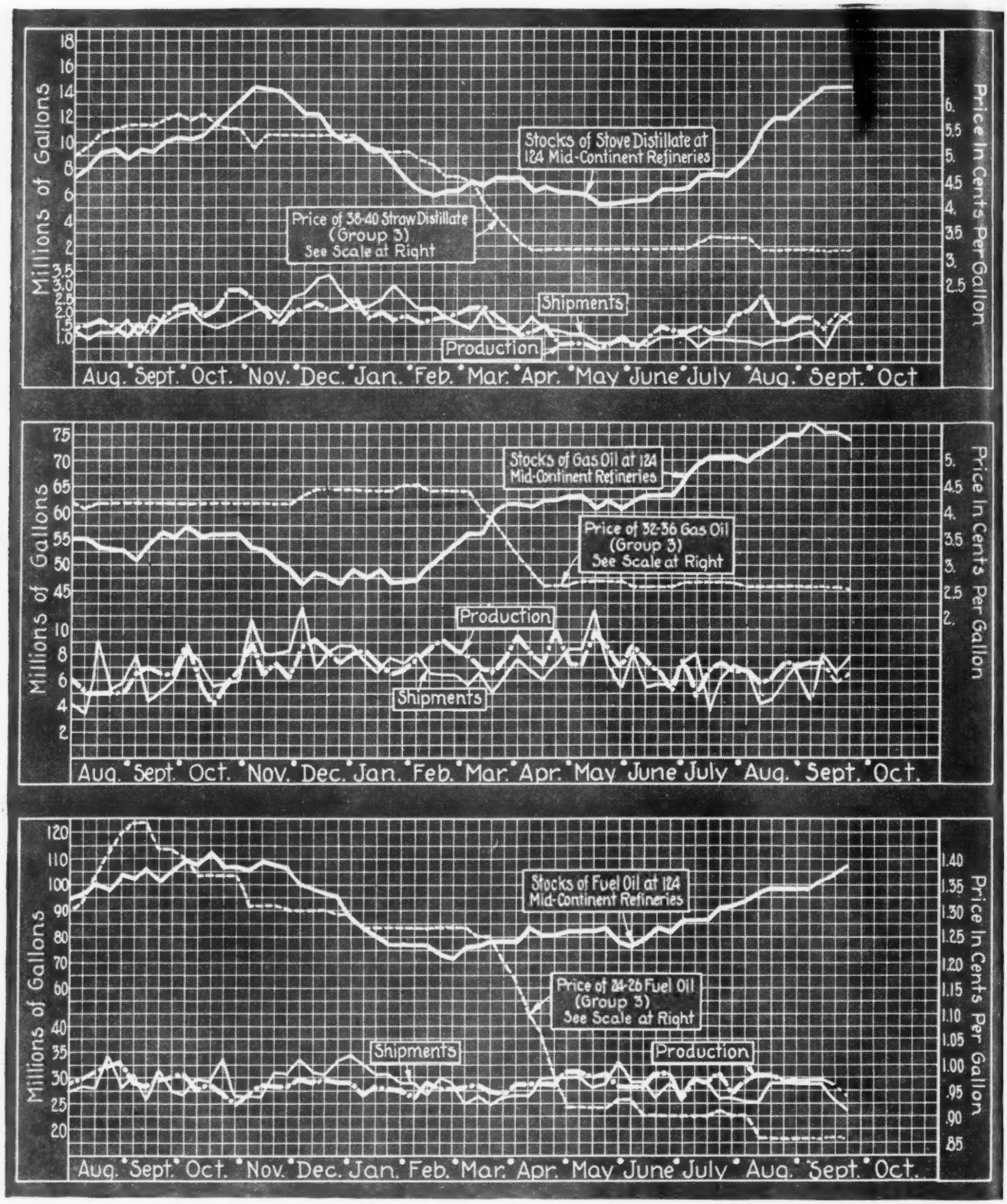

Price of 58-60-437 E.P. U.S. Motor Gasoline F.O.B. Group 3
35-35.9 Gravity Mid-Continent Crude (Prairie)
Cents Per Gallon
Gasoline Stocks at 124 Mid-Continent Refineries
Millions of Gallons
Production
Shipments
June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct.

Prices shown above are extended to date shown in Refinery Market and Crude tables in Market section of this issue and stocks, shipments and Production are extended to date shown in table on opposite page


Kerosene Stocks at 124 Midcontinent Refineries
Price of 41-43 W.W. (Group 3) See Scale at Right
Millions of Gallons
Price in Cents per Gallon.
Shipments
Production
July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct.

Barometer of the Mid-Continent Refinery Market—Week Ending Sept. 30, 1927

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 124 Plants to National Petroleum News

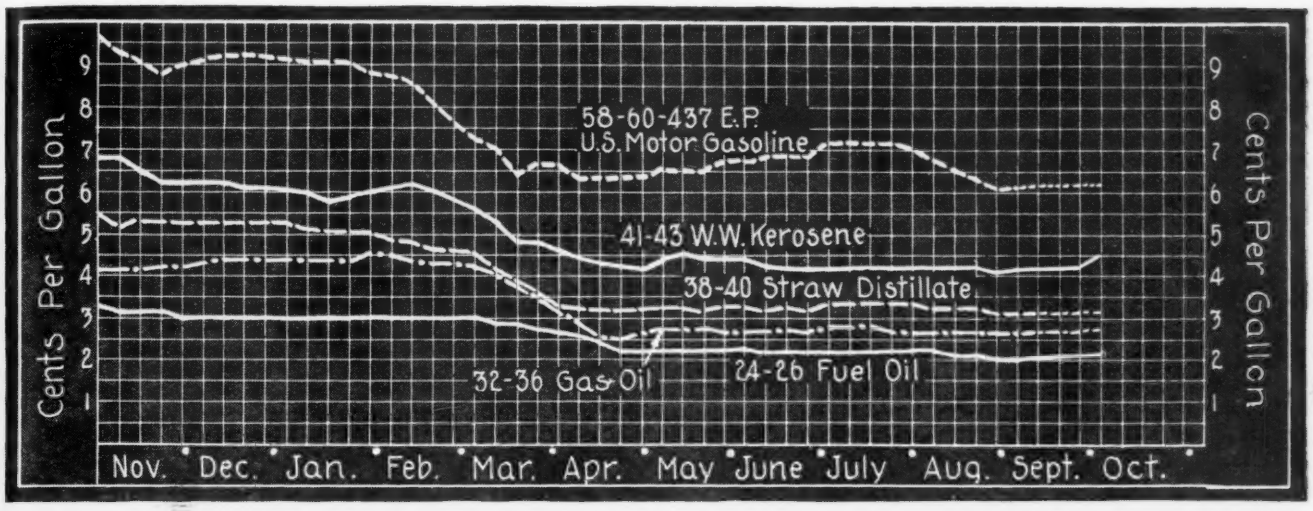

Millions of Gallons
Price In Cents Per Gallon
Stocks of Stove Distillate at 124 Mid-Continent Refineries
Price of 38-40 Straw Distillate (Group 3) See Scale at Right
Shipments
Production
Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct
Millions of Gallons
Price In Cents Per Gallon
Stocks of Gas Oil at 124 Mid-Continent Refineries
Price of 32-36 Gas Oil (Group 3) See Scale at Right
Production
Shipments
Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct.
Millions of Gallons
Price In Cents Per Gallon
Stocks of Fuel Oil at 124 Mid-Continent Refineries
Price of 24-26 Fuel Oil (Group 3) See Scale at Right
Shipments
Production
Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct.

charges of crude to stills. Crude runs for the week were 270,393 barrels per day as compared with 283,265 barrels per day the previous week. The reduction in runs totaled 12,872 barrels daily average. There was an increase of 2,500 barrels daily average in partly refined oils charged to stills to 18,113 barrels per day.

Every group in the field reduced crude charges except North and Central Texas. In that area crude runs were advanced 3,000 barrels per day, or 5.3 per cent. Kansas refiners cut their crude runs nearly 6,000 barrels daily average. Oklahoma refiners cut 4,000 barrels daily average and North Louisiana and Arkansas refiners cut their runs 6,000 barrels daily average.

The reduction in crude runs brought

Current Prices of Principal Mid-Continent Refined Products


Cents Per Gallon
58-60-437 E.P. U.S. Motor Gasoline
41-43 W.W. Kerosene
38-40 Straw Distillate
32-36 Gas Oil
24-26 Fuel Oil
Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct.

Prices shown above are on Group 3 basis and extended to date shown in Refinery Market Tables in Market Section of this Issue

gasoline production down 2,300,000 gallons, or 5.8 per cent, to 37,368,000 gallons, the lowest figure reached in the past two months.

Kerosene shipments showed marked improvement during the week, jumping up 1,000,000 gallons, or 20 per cent, to 6,202,000 gallons. At the same time refiners enlarged their cut of kerosene to meet the greater demand, so that production for the week totaled 6,356,000 gallons. Stocks increased only 154,000 gallons to 10,046,000 gallons at all plants. For the first time since the week ending June 3 refiners were able to draw on their reserves of stove distillate the past week. Shipments from all plants increased 300,000 gallons, or 18 per cent, to 1,901,000 gallons while production was increased only 115,000 gallons to 1,775,000 gallons, causing a reduction in stocks of 126,000 gallons. Total stocks at the close of the week were 14,261,000 gallons. Oklahoma refiners were the only ones not reporting shipments in excess of production.

Demand for gas oil likewise improved materially during the week. Shipments increased 1,400,000 gallons to 7,960,000 gallons, causing a cut in stocks of almost exactly that amount. Total stocks at the close of the week were 74,619 gallons.

Fuel oil shipments dropped off almost 1,000,000 gallons during the week to 24,667,000 gallons but production was cut 3,500,000 gallons to 25,863,000 gallons, so that stocks were increased only 1,200,000 gallons to 105,145,000 gallons. Stocks were cut in Kansas and Texas, but increased in other areas.

J. J. (Jack) Conry, general superintendent of Carter Oil Co., Mid-Continent subsidiary of the Standard of New Jersey, spent his vacation in Michigan.

Gasoline Stocks Aug. 31 Lower Than Year Ago

CLEVELAND, Oct. 3.—Gasoline stocks were reduced 5,614,000 barrels in August to 33,455,000 barrels Aug. 31, according to the petroleum statistics of the Bureau of Mines. Stocks Aug. 31, 1926, were 34,421,000 barrels. Stocks Aug. 31 represented 31 days' supply at the current rate of foreign and domestic demand, compared with 35 days' supply Aug. 31, 1926, at the rate of demand then current.

Production of gasoline in August averaged 904,000 barrels daily, a decline of 3,000 barrels from the July rate of output. Imports of gasoline averaged 11,000 barrels daily, compared with 6,000 barrels daily in July but exports averaged 135,000 barrels, compared with 104,000 barrels daily in July. Domestic demand averaged 961,000 barrels daily in August although total demand was 5,000 barrels less than July demand.

In the first eight months of 1927 domestic demand for gasoline totaled 195,904,000 barrels, compared with 172,807,000 barrels in the corresponding time of 1926. The increase this year was 13.3 per cent over 1926 domestic demand.

Kerosene stocks were reduced 665,000 barrels to 8,373,000 barrels. Domestic demand rose 24,000 barrels daily average in August to 109,000 barrels. Export shipments increased 25 per cent to 55,000 barrels. Output at 143,000 barrels daily average in August was 2,000 barrels average more than in July.

Lubricating oil stocks were lowered only 5,000 barrels. Production was increased 3,000 barrels daily average. An increase of 7,000 barrels in daily average domestic demand to 65,000 barrels average failed to offset a decline of 8,000 barrels in the daily average export demand to 24,000 barrels.

Heavy export shipments caused a decline of 10,856,000 pounds in stocks of paraffin wax. Shipments of wax abroad averaged 1,104,000 pounds daily. Domestic demand was 637,000 pounds daily, compared with 1,036,000 pounds daily in July.

Gas and fuel oil stocks east of California Aug. 31 were 30,346,000 barrels, 1,456,000 barrels more than stocks July 31.

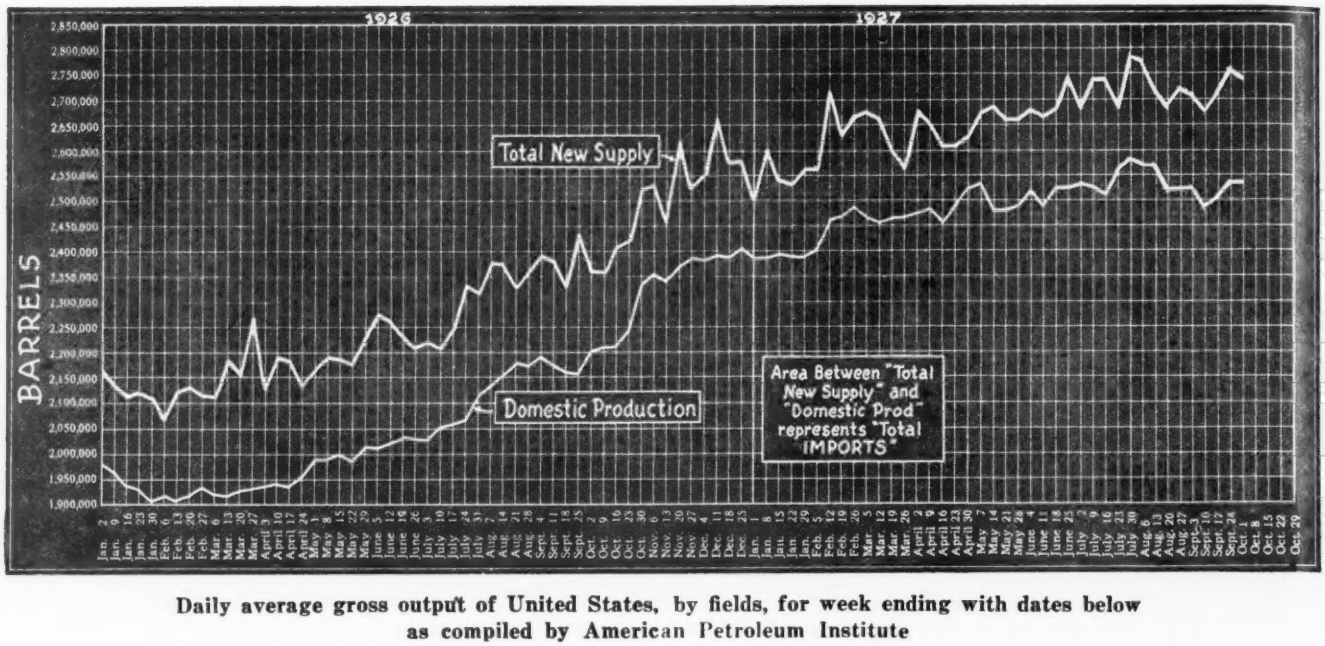
Production of crude oil averaged 2,516,000 barrels in August, a decline of 11,000 barrels from July average production. This decline was due to a fall in Seminole net production to 437,000 barrels daily average. Seminole's net daily average production in July was 490,000 barrels.

Stocks of crude oil east of California rose 8,743,000 barrels in August to 333,673,000 barrels. Total crude oil stocks in California fell 1,769,000 barrels to 115,227,000 barrels Aug. 31. Light California crude stocks decreased 2,039,000 barrels.

Daily average production of crude in Oklahoma fell 18,800 barrels daily average in August to 847,800 barrels. Texas production rose 14,200 barrels daily average to 578,600 barrels average. California production fell 1,300 barrels daily average to 621,900 barrels average. Wyoming production fell 7,500 barrels daily average to 56,000 barrels daily average.

Among the Tulsa exposition visitors from Houston were A. B. Sloan, vice president of the Sinclair Gulf Pipeline Co. and Jeff E. Hooper, general production superintendent in Gulf Coastal territory of Sinclair Oil & Gas Co.

Daily Average Crude Oil Production and Imports



Daily average gross output of United States, by fields, for week ending with dates below as compiled by American Petroleum Institute

PRODUCTION SUMMARY

Production East of Rockies	1,901,650	1,896,300
Increase		5,350
Total production in U. S.	2,536,950	2,534,100
Increase		2,850
Crude oil imports	* 197,571	221,000
Decrease		23,429
Total crude supply	2,734,521	2,755,100
Decrease		20,579

GULF COAST

Coastal Texas

	Oct. 1	Sept. 24
West Columbia	10,500	10,800
Damon Mound	900	900
Big Creek	2,700	2,850
Boling	2,400	2,400
Blue Ridge	4,300	3,800
Pierce Junction	7,700	9,050
Humble	2,050	2,200
Goose Creek	7,900	8,050
South Liberty	2,650	2,600
Hull	15,850	14,700
Saratoga	900	1,000
Batson	1,150	1,400
Sour Lake	4,000	4,000
Spindletop	54,250	57,050
Orange County	4,600	4,600
Others	3,700	3,800
Total, Coastal Texas	125,550	129,200
Decrease		3,650

Coastal Louisiana

Vinton	4,900	5,000
Lockport	5,600	5,850
Evangeline	1,400	1,200
Edgerly	2,000	2,200
Others	1,350	1,500
Total, Coastal Louisiana	15,250	15,750
Decrease		500
Total, Gulf Coast	140,800	144,950
Decrease		4,150

ROCKY MOUNTAIN

Wyoming

Salt Creek	35,800	32,750
Grass Creek	2,600	2,450
Elk Basin	1,050	1,100
Big Muddy	3,000	2,900
Lost Soldier	2,650	2,650
Rock River	2,550	2,850
Lance Creek	650	700
Teapot Dome	1,200	850
Others	5,400	5,550
Total, Wyoming	54,900	51,800
Increase		3,100

Montana

Cat Creek	2,050	2,050
Sunburst	11,500	11,500
Others	250	200
Total, Montana	13,800	13,750
Increase		50

Colorado

Moffat (Craig)	1,650	1,650
Fort Collins	2,950	2,800
Florence	950	1,000
Others	1,300	1,350
Total, Colorado	6,850	6,800
Increase		50

New Mexico

Table Mesa	50	150
Artesia	1,450	1,300
Hogback	250	400
Rattlesnake	100	150
Others	100	100
Total, New Mexico	1,950	2,100
Decrease		150
Total, Rocky Mountain	77,500	74,450
Increase		3,050

CALIFORNIA

Santa Fe Springs	38,500	39,000
Long Beach	91,000	90,500
Huntington Beach	63,000	65,500
Torrance	20,500	21,000
Dominguez	15,000	15,000
Rosecrans	8,000	8,000
Inglewood	33,000	33,500
Midway-Sunset	84,000	84,000
Ventura Avenue	57,300	57,800
Seal Beach	70,000	68,500
Others	155,000	155,000
Total, California	635,300	637,800
Decrease		2,500

EASTERN

(Including Ill., Ind., Ky., Ohio, W. Va., Pa., and N. Y.)	110,500	109,000
Increase		1,500

OKLAHOMA

North Braman	2,800	2,900
South Braman	2,450	2,250
Blackwell	3,950	3,950
Hubbard	4,000	4,000
Thomas	3,750	3,850
Tonkawa	18,850	18,650
Garber	10,850	10,950
Burbank	35,450	35,850
Osage, outside Burbank	30,800	30,850
Watchorn	1,800	1,800
Cushing	21,250	21,300
Yale Jennings	9,650	9,650
Davenport	2,900	2,900
Bristow-Slick	24,950	24,950
North Okmulgee	16,200	16,200
Lyons-Deaner	5,050	5,050
Stroud	1,300	1,300
Cromwell	13,200	13,250
Papoose	6,350	6,350
Wewoka	14,200	14,200
**Seminole	71,750	73,300
**Bowlegs	140,900	143,250
**Searight	30,500	31,300
**Little River	31,550	25,450
Earlsboro	179,650	171,350
Duncan district	6,950	6,950
Graham	6,650	6,700
Fox	1,900	1,900
Healdton	14,950	14,950
Hewitt	9,700	9,700
Scholem Alecham	15,850	15,950
Others	69,600	69,400
Total Oklahoma	809,700	800,400
Increase		9,300

**Previously included in Seminole production.

KANSAS

Greenwood County	32,800	33,000
Florence-Covert	1,500	1,500
Peabody-Elbing	3,800	3,800
Eldorado-Towanda	14,300	14,300
Rainbow Bend	2,150	2,200
Augusta-Fox-Bush	4,200	4,200
Russell	2,500	2,500
Churchill	13,750	13,700
Others	30,000	30,000
Total, Kansas	105,000	105,200
Decrease		200

NORTH LOUISIANA

Homer	4,700	4,700
Haynesville	7,050	7,100
Caddo, light	13,500	13,200
Caddo, heavy	4,800	4,900
De Soto, Red River	4,050	5,000
Elm Grove	700	700
Bellevue	1,150	1,150
Cotton Valley	5,350	5,350
Urania	9,900	10,000
Pleasant Hill	1,150	1,250
Total, N. Louisiana	52,350	53,350
Decrease		1,000

ARKANSAS

El Dorado	5,450	5,700
Smackover, light	9,850	9,950
Smackover, heavy	78,350	78,500
Stephens	1,200	1,200
Nevada	2,550	2,650
Lisbon	3,050	3,000
Others	100	100
Total, Arkansas	100,550	101,100
Decrease		550

TEXAS (OUTSIDE GULF COAST)

Panhandle District

Hutchinson County	69,150	74,000
Carson County	8,600	8,650
Gray County	11,000	9,700
Wheeler County	1,400	1,350
Others	50	50
Total, Panhandle District	90,200	93,750
Decrease		3,550

North Texas

	Oct. 1	Sept. 24
Burkburnett	13,000	12,800
Electra	12,400	12,000
Iowa Park and K-M-A	2,600	2,100
Wilbarger	11,500	11,850
Archer County	25,950	26,200
Montague-Cooke	16,600	15,750
Others	650	700
Total, North Tex.	82,700	81,400
Increase		1,300

West Central Texas

Stephens County	8,300	8,450
Eastland-Desdemona	9,400	9,100
Brown County	23,000	24,000
Coleman County	1,200	1,200
Callahan County	4,000	3,600
Shackelford County	5,650	5,700
Young County	10,350	10,200
Throckmorton County	1,350	1,200
Palo Pinto County	700	750
Others	1,400	1,350
Total, W. Central Texas	65,350	65,550
Decrease		200

West Texas

Jones County	1,800	1,850
Mitchell and Scurry Counties	3,700	3,700
Howard County	3,200	3,000
Reagan County	24,050	23,600
Crane and Upton Counties	137,150	136,350
Crockett County	2,300	2,200
Pecos County	24,500	23,350
Winkler County	8,950	10,150
Others	2,400	2,250
Total, West Texas	208,050	206,450
Increase		1,600

EAST CENTRAL TEXAS

Mexia	9,450	9,500
Currie	650	650
Richland	750	750
Wortham	2,750	2,800
Corsicana-Powell	14,800	14,900
Nigger Creek	1,650	1,700
Total, East Central Texas	30,050	30,300
Decrease		250

SOUTHWEST TEXAS

Luling	15,650	15,850
Lytton Springs	1,700	1,900
Somerset	900	900
Laredo District	9,100	9,350
Piedras Pintas	.....	50
Dale	1,000	.....
Others	550	2,350
Total, Southwest Texas	28,900	30,400
Decrease		1,500
Total, Texas—(Out-Gulf Coast)	505,250	507,850
Decrease		2,600

Half Mile Extensions in Little River; Other Pools Are Quiet

By Laurence E. Smith
N. P. N. STAFF WRITER

Bulletin

Same Proration to Continne

TULSA, Oct. 3.—(By Telegraph)—At a general meeting of Seminole operators today the decision was reached to prorate the entire district to 450,000 barrels, beginning Oct. 6. The new plan will include the Little River pool. It is now figured that the first deduction from the total will be about ten per cent. This agreement succeeds one which expires Oct. 5, which affects Little River only. It was also decided that the question of shooting will be left to the umpire and to an advisory committee. A considerable number of wells that have declined in production to under 50 barrels will probably be shot within a few days.

TULSA, Oct. 1

EXCEPT for Little River, the pool now in the making south of the Bowlegs field, the week in Mid-Continent development was somewhat quiet. All interest is centered on this field, which looks like a small one at one moment and a large one the next.

There is nothing certain about the Little River pool except its uncertainty. Just when it appeared to have been killed off to the northwest by the Gypsy Oil Co.'s failure in the southwest of 35-8-6 (map, page 43, NATIONAL PETROLEUM NEWS, Sept. 28) the same company went ahead and got a producer a half mile northeast of its failure and nearly a mile north of the discovery well of the pool. About the same time, the Amerada Petroleum Corp. and H. F. Wilcox Oil & Gas Co. came in with an offset to the Gypsy's producer, thereby changing the complexion of things in that part of the territory.

In this peculiar mixture of failures and producers, with the latter bearing no definite relationship to the former, the field more nearly resembles Earlsboro, although all five fields of the Seminole district have been quite peculiar. Guessing on the field's future, therefore, is an idle pastime. It may be anything from what it is doing now up to a very high figure.

The field's high mark thus far has been 42,000 barrels. It was flowing wide open to get a 100-per cent test. The following day it was cut back to 33,000 barrels, under the application of the percentage plan now in effect. This plan, which is embodied in a corporation commission order, expires Oct. 5. By expiration date the operators expect to have decided on whether there is to be a continuance of curtailment or unrestricted production.

The new wells of the week in Little River were as follows:

Amerada and Wilcox No. 1 Fore, SE NW NE of 35-8-6, initial production 70 barrels per hour.

Gypsy Oil Co.'s No. 1 Pottey, SW NE NE of 35-8-6, offsetting the Fore well, 990 barrels in 12½ hours, increasing to 2,100 barrels the following day. These two wells effect an extension of a half mile from the earlier northern limits of production and are about a mile from the discovery well.

Blackwell Oil & Gas Co.'s No. 5 Nitey, SE NE SE of 35-8-6, 3,888 barrels in 18 hours.

Gypsy Oil Co.'s No. 1 Campbell, SW NW SE of 36-8-6, 385 barrels the first day with the Wilcox sand barely scratched; is being deepened.

Mid-Continent Petroleum Corp.'s No. 3 Wadsworth, NW SW SW of 36-8-6, maximum production 100 barrels per hour.

Thanks to the climb in Little River output and some sensational doings in Earlsboro, output of the entire district hit a figure of nearly 460,000 barrels for the 24 hours ended Thursday morning. In Earlsboro, the Skelly Oil Co. contributed materially to the increase. Its No. 1 Spencer, northwest of 12-9-5, was a notable completion several weeks ago.

ITS HIGH mark was 13,500 barrels. It gradually subsided and was put on gas lift. Meantime, the company was trying to fish out a string of tools and swab that were lost in completing it originally. Production had fallen to less than 1,500 barrels. The lost equipment was recovered last week and production jumped to 7,600 barrels. Then, to make this 20-acre lease look really important, the No. 2 well, which had come in for 1,600 barrels two weeks ago, put 6,510 barrels in the tanks the first 24 hours after a 20-quart shot.

Officials of the company believe the manner of shooting had something to do with the unexpected increase. A water-jacketed shell was used and their theory is that some wells in the field have not responded so well as they might have from shots. The water-jacket, they believe, prevents fusing of the sand.

The Independent Oil & Gas Co. is getting quite a reputation for big wells in Earlsboro. Another notch was added to the gunstock the past week when its No. 3 Bruner, NE SW NE of 10-9-5, broke loose for no apparent reason and flowed at the rate of 500 barrels an hour. Five days earlier the well had come in for about 2,500 barrels. It was not agitated.

No extensions of producing territory were made during the week to any of the four older pools of the district. Earlsboro still has many completions in the offing and probably will hold its production at more than 175,000 barrels for several weeks.

THE agreement entered into two months ago by operators and incorporated in the corporation commission's order included a provision against shooting wells. This rule has been well observed. Where offset wells have been shot, the umpire gives permission to shoot a new or an old well, when the operator desires. A large number of wells in Earlsboro and Bowlegs have never been shot and production doubtless has been greatly held down by this restriction.

The rest of the Mid-Continent territory is quiet, both in Oklahoma and Kansas. Not much new work is being started and the tendency is to hold it to the absolutely minimum. A fair amount of drilling is under way in Logan county, where the Roxana Petroleum Corp.'s discovery well, nearly 6,000 feet deep, near Lovell and 20 miles south of the Garber field, continues to make 2,500 barrels per day. No tests under way have reached critical depths, although several should be completed by the end of this year.

Offices of the Bureau of Mines at Dallas have been moved to 308 Federal Building. H. B. Hill is in charge. Others making up the Dallas staff include Chase E. Sutton and E. J. Dewees.

Seminole District Production by Companies and Leases, September 30 and September 23, 1927

Company	Farm	S.T.R.	Sept. 30 No. Wells	Sept. 30 Prod.	Sept. 23 No. Wells	Sept. 23 Prod.
BOWLEGS						
Amerada	Rascoe	15- 8-6	8	5,440	8	6,525
Atlantic	Baker	1- 8-6	4	1,955	4	1,846
Atlantic	Fleet	23- 8-6	4	1,312	4	1,572
Atlantic	Grayson	12- 8-6	2	2,247	2	2,527
Atlantic	H. Jones	16- 8-6	3	140	3	193
Atlantic	C. Jones	9- 8-6	3	1,179	3	1,454
Total Atlantic			16	15,374	16	7,610
Barnsdall	McNac	28- 8-6	1	50	1	50
Barnsdall	Murrow	11- 8-6	4	1,869	4	2,249
Total Barnsdall			5	1,919	5	2,299
Carter	Bowlegs	15- 8-6	3	2,140	3	2,365
Carter	Burden	23- 8-6	1	445	1	375
Carter	Jones	11- 8-6	1	2,295	1	110
Carter	Harjoche	15- 8-6	6	1,990	6	2,090
Carter	Hilly	23- 8-6	1	1,455	1	1,535
Carter	McGeisey	15- 8-6	1	0	1	0
Carter	Walker	15- 8-6	2	925	2	986
Carter	Wise	23- 8-6	11	8,920	10	8,710
Total Carter			26	18,170	25	16,170
Empire	Lacey	15- 8-6	6	1,333	6	1,334
Empire	Wise	23- 8-6	2	2,032	2	2,070
Total Empire			8	3,365	8	3,404
Gypsy	Bowlegs	22- 8-6	1	535	1	600
Gypsy	Brown	33- 8-6	1	100	1	100
Gypsy	Cumsey	8- 8-6	4	1,530	4	1,365
Gypsy	Grayson	13- 8-6	2	2,472	2	1,507
Gypsy	Walker	15- 8-6	8	3,914	8	3,992
Gypsy	Wise	23- 8-6	3	397	2	27
Total Gypsy			19	5,948	18	10,356
Indep. et al	Coker	21- 8-6	1	366	1	425
I. T. I. O.	Barnett	24- 8-6	2	1,167	2	1,146
I. T. I. O.	Billington	22- 8-6	3	1,356	3	1,227
I. T. I. O.	Bowlegs	22- 8-6	8	3,373	8	3,751
I. T. I. O.	Davis	13- 8-6	3	2,442	3	1,547
I. T. I. O.	Fay	18- 8-6	4	3,717	3	2,376
I. T. I. O.	Goforth	15- 8-6	10	3,126	10	3,035
I. T. I. O.	Livingston	15- 8-6	11	8,707	11	9,693
I. T. I. O.	Lizzie	11- 8-6	2	699	2	732
I. T. I. O.	Walker	15- 8-6	8	1,991	8	2,663
I. T. I. O.	Wilmont	15- 8-6	4	2,378	4	2,579
I. T. I. O.	Work	24- 8-6	1	430	1	694
I. T. I. O.	Youngblood	23- 8-6	4	802	4	872
Total I. T. I. O.			60	30,188		
McCulloch	Bowlegs	22- 8-6	4	112	3	420
Mid-Continent	Baker	10- 8-6	4	3,980	4	4,193
Mid-Continent	Bowlegs	22- 8-6	1	855	1	935
Mid-Continent	Hutke	24- 8-6	1	5	1	5
Total Mid-Continent			6	4,840	6	5,134
Minnehoma	Bowlegs	15- 8-6	4	860	4	1,679
Prairie	Gahagan	23- 8-6	4	1,175	3	1,810
Prairie	Harber	10- 8-6	7	3,950	7	4,095
Prairie	Templeton	12- 8-6	1	2,950	1	2,985
Prairie	Jones	11- 8-6	1	1,345	1	1,440
Prairie	Whitney	23- 8-6	4	210	4	455
Total Prairie			21	9,530	16	10,785
Pure	Reed	14- 8-6	16	9,902	16	10,583
Pure	D. Strother	14- 8-6	2	1,142	2	1,172
Pure	E. Strother	16- 8-6	1	5	1	10
Pure	F. Strother	10- 8-6	2	636	1	642
Total Pure			21	11,685	20	12,407
Roxana et al	Taylor	16- 8-6	6	2,421	6	2,360
Shaffer	Lacey	14- 8-6	3	910	3	872
Sinclair	Adam	22- 8-5	1	0	1	0
Sinclair	Cumsey	10- 8-6	2	4,192	1	3,290
Sinclair	Harjo	14- 8-6	3	2,080	3	2,390
Sinclair	Jones	8- 8-6	4	7,675	4	7,730
Sinclair	Taylor	10- 8-6	4	4,565	4	3,866
Sinclair	Walker	22- 8-6	4	2,090	4	1,810
Total Sinclair			18	20,602	17	19,086
Texas	Reed	14- 8-6	8	7,175	7	6,630
Tidal	Grayson	13- 8-6	3	1,295	3	1,455
Tidal	Harjoche	10- 8-6	4	2,375	4	2,320
Total Tidal			7	3,670	7	3,775
Twin State	Jones	11- 8-6	1	945	1	535
TOTAL BOWLEGS			239	141,794	236	142,199
LITTLE RIVER						
Amerada & Wilcox	Fore	35- 8-6	1	1,875	0	0
Gypsy	Pottey	35- 8-6	1	1,278	0	0
Blackwell	Nitey	35- 8-6	4	10,133	3	9,527
Gypsy	Campbell	36- 8-6	1	385	0	0
I. T. I. O.	Dungan	35- 8-6	1	1,824	1	2,684
I. T. I. O.	House WE	1- 7-6	1	2,275	1	839
I. T. I. O.	House MA	1- 7-6	1	2,021	1	3,827
I. T. I. O.	Jackson	1- 7-6	1	2,286	1	2,964
I. T. I. O.	Nitey	2- 7-6	2	5,692	2	8,537
I. T. I. O.	Reed	1- 7-6	1	1,276	1	1,358
Total I. T. I. O.			7	15,374	7	20,389
Mid-Continent	Wadsworth	36- 8-6	3	2,990	2	3,000
P. & R.	Dungan	35- 8-6	1	1,130	1	3,162
TOTAL LITTLE RIVER			18	33,166	13	35,898

Company	Farm	S.T.R.	Sept. 30 No. Wells	Sept. 30 Prod.	Sept. 23 No. Wells	Sept. 23 Prod.
EARLSBORO						
Amerada	Anderson	15- 8-6	4	3,170	4	3,250
Amerada	Cowden	4- 9-5	5	2,125	4	1,545
Amerada	Rodgers	3- 9-5	2	4,675	2	5,665
Total Amerada			11	9,970	10	10,460
Barnsdall	Brown	10- 9-5	3	3,030	3	4,723
Barnsdall	Bruner	10- 9-5	1	2,850	1	0
Barnsdall	C. Cudjo	11- 9-5	1	27	1	30
Barnsdall	D. Davis	11- 9-5	3	2,477	3	2,320
Barnsdall	J. Davis	11- 9-5	2	252		
Barnsdall	M. Davis	11- 9-5	3	2,251	3	2,072
Barnsdall	Gibson	9- 9-5	6	2,307	6	4,945
Barnsdall	Hearn	15- 9-5	1	22	1	25
Barnsdall	Hooly	4- 9-5	1	11	1	0
Barnsdall	Ingram	4- 9-5	2	2,150	1	2,520
Barnsdall	Pack	10- 9-5	4	1,256	4	1,771
Barnsdall	Peter	10- 9-5	4	423	4	538
Barnsdall	Sebolka	15- 9-5	1	2,624	1	2,570
Barnsdall	Sango	2- 9-5	1	134	1	134
Barnsdall	Smith	15- 9-5	1	6	1	6
Barnsdall	Sullivan	11- 9-5	2	1,586	4	1,693
Barnsdall	Sullivan	10- 9-5	2	66		
Barnsdall	Watsutke	12- 9-5	3	3,179	3	2,341
Total Barnsdall			43	24,652	40	26,000
Carter	Payne	12- 9-5	2	2,430	2	2,825
Carter	Sango	2- 9-5	2	365	2	395
Total Carter			4	2,795	4	3,220
Continental	Spencer	12- 9-5	3	8,420	3	6,935
Crosbie	Bryant	9- 9-5	2	2,010	2	2,435
Empire	Edmundson	3- 9-5	3	4,197	2	2,131
Gypsy	Bruner	10- 9-5	3	4,757	3	5,482
Gypsy	Carter	11- 9-5	6	3,505	5	5,827
Gypsy	McFarland	9- 9-5	2	0	2	0
Gypsy	Noble	12- 9-5	3	9,802	3	4,105
Gypsy	Peter	10- 9-5	4	1,360	4	1,395
Gypsy	State	16- 9-5	4	145	4	1,395
Gypsy	Strain	17- 9-5	1	0	1	12
Total Gypsy			23	19,569	23	17,198
Independent	Bruner	10- 9-5	4	12,500	3	1,205
Indep.	Gaines	11- 9-5	2	10,625	2	11,140
Indep.	Knappen	8- 9-5	3	1,795	3	2,080
Indep.	O'Dell	4- 9-5	4	2,750	4	3,050
Indep.	Sullivan	10- 9-5	4	4,044	4	5,076
Total Independent			17	29,919	16	22,471
Interocean	Payne	12- 9-5	1	0	1	40
Magnolia	Bryant	9- 9-5	4	1,785	4	1,770
Magnolia	Cowden	4- 9-5	2	602	2	724
Magnolia	Edmundson	3- 9-5	2	1,552	2	1,721
Magnolia	Holmsley	11- 9-5	5	6,515	5	7,857
Magnolia	Ingram	10- 9-5	1	52	1	70
Magnolia	Lena	10- 9-5	3	189	3	387
Magnolia	Seay	12- 9-5	4	1,723	4	2,443
Magnolia	Simpson	10- 9-5	4	945	4	460
Magnolia	Sparks	11- 9-5	6	4,519	6	5,116
Total Magnolia			31	17,882	31	20,548
Mid-Continent	McCumber	9- 9-5	7	1,965	6	2,595
Mid-Kansas	Anderson	14- 9-5	1	0	1	0
Phillips	Dunnaway	15- 9-5	1	35	1	30
Phillips	Graham	9- 9-5	6	1,279	6	1,392
Total Phillips			7	1,314	7	1,422
Prairie	Baker	23- 9-5	1	0	1	50
Prairie	Davis	13- 9-5	3	2,170	3	2,740
Prairie	C. Graham	3- 9-5	2	3,250	2	3,345
Prairie	O. Graham	10- 9-5	4	6,665	4	7,345
Prairie	Stidham	11- 9-5	9	12,485	9	14,240
Total Prairie			18	24,570	19	27,720
Roxana	Hearn	13- 9-5	1	31	1	36
Roxana	Bayliss	17- 9-5	1	7	1	29
Roxana	Spencer	12- 9-5	2	3,890	2	3,751
Total Roxana			4	4,018	4	3,816
Sinclair	Foreman	18- 9-5	1	17	1	15
Sinclair	Hollins	12- 9-5	3	2,675	3	3,825
Total Sinclair			4	2,692	4	3,840
Skelly	Anderson	2- 9-5	1	100	1	100
Skelly	Spencer	12- 9-5	2	12,480	2	1,481
Total Skelly			3	12,580	3	1,581
Texas	Brown	10- 9-5	4	2,560	4	3,150
Texas	Rodgers	5- 9-5	1	7,405	1	6,070
Texas	Wilmont	10- 9-5	4	240	4	45
Total Texas			9	10,205	9	9,265
Tidal	Watkins	9- 9-5	4	1,745	4	1,480
Twin State	Barker	12- 9-5	1	1,635	1	2,160
Twin State	Hearn	2- 9-5	1	1,850	1	2,100
Total Twin State			2	3,485	2	4,260
TOTAL EARLSBORO			203	184,060	197	167,498
TOTAL SEARIGHT			58	31,786	57	31,532
TOTAL SEMINOLE PROPER			323	71,701	323	73,717
GRAND TOTAL SEMINOLE DISTRICT			844	462,507	827	450,843

Completions in N. E. Central, West, Panhandle and North Texas, Week Ended October 1, 1927

NORTH EAST CENTRAL DISTRICT

Brown County

Company	Well Farm	Location Survey	Depth	Init. Prod.
Bradstreet	10-Stout	Smith	1154-1191	35
Schafner	5-Hinson	Logan	1255-1257	22
Forrest	10-Smith	SAMG	1326-1345	200
Roxana	14-Smith	SAMG	1306-1335	185
Roxana	17-Smith	SAMG	1325-1348	184
Roxana	16-Smith	SAMG	1327-1339	15
Sinclair	4-Smith	SAMG	1298-1303	350
Brooks	1-Hart	H&TB	1200-1233	17
Humphreys	2-McCully	H&TB	1120-1150	3
Humble	10-Kilgore	Delgado	1194	Dry
Josey et al	1-Jones	Delgado	T.D. 1200	Dry
Gholson et al	2-Collier	Collier	T.D. 1167	Dry
Ross	1-Miller	Swindell	T.D. 1646	Dry
Selby	15-Ellis	SAMG	T.D. 1407	Dry

Callahan County

Beams et al	3-Jackson	ET	855-174	10
Gibson et al	8-Newman	D&DA	T.D. 916	Dry
Star-Kiser	1-Balkeley	BBB&C	T.D. 863	Dry
Stalker	1-Seals	TP	T.D. 1050	Dry

Coleman County

Natl	1-Crump	Coleman	T.D. 1206	Dry
Hodges et al	1-Vaughn	B&S	T.D. 942	Dry

Eastland County

Cranfill-Reynolds	4-Spencer	H&TC	T.D. 3020	Dry
Panhandle	3-Webb	Van Norman	1184-1192	3

Jack County

Seaboard	1-Cullers	Cullers	1994-1998	125
Reed-Nesley	1-Keyser	Watkins	T.D. 1991	Dry

Jones County

Tomberlin et al	1-Handricks	TP	T.D. 2509	Dry

Limestone County

Reiter et al	2-Ward	Varella	2879-2890	50
Transcont	1-Lewis	Varella	2894-2899	387

Palo Pinto County

Panhandle	1-Byers	TP	T.D. 1550	Dry

Shackleford County

Harris et al	1-McLemore	TeAL	T.D. 730	Dry
Phillips	4-Brazzill	BAL	T.D. 4507	Dry
Wilson	1-Lazarus	TP	T.D. 2003	Dry

Stephens County

Texas-Fidel	1-Lippe	TP	T.D. 3820	Dry
Hughes et al	1-Long	TP	T.D. 2000	Dry
Kendridge	1-Coady	LAL	T.D. 3147	Dry
Hoffman	1-Ledbetter	TP	T.D. 2293	Dry
Texas Corp	45-Parks	TEL	1878-1879	3M
Pa-ce-Ward	1-Sloan	Yeomans	3240-3341	40&3½M

Young County

Mid-Tex	2-Childress	Morgan	3338-3360	120
T. P. C. O.	3-Donnell	TEL	3370-3384	160
Pitzer-West	1-Ninson	Pier	2210-2213	40
Humphreys	1-Griffin	Parham	T.D. 4537	Dry
Dyer et al	1-Swain	Pier	T.D. 2220	Dry
Forhes	1-Graham	Ross	T.D. 4300	Dry
Transcont	1-Moore	Fisher	T.D. 4737	Dry

NORTH TEXAS

Archer County

Company	Well Farm	Location Survey	Depth	Init. Prod.
Burton et al	1-Farmer	NAR	1485-1487	27
Traham et al	1-Allan	DCSL	T.D. 1803	Dry
Mitchen et al	1-Farmer	NAR	T.D. 1604	Dry
Barkley et al	2-Andrews	Spavin	T.D. 1104	Dry

Cooke County

Stahl-Lynch	3-Koelzer	Scott	1629-1630	30
Gray et al	4-Park	MT	1653-1681	55
Sowell	2-Schmitz	MT	1686-1699	18
United Prod	1-Hyman	ET	T.D. 1603	Dry

King County

Johnson et al	1-Burnett	Larzaren	T.D. 3506	Dry

Montague County

Bridwell et al	2-McCaughey	Nichols	1143-1152	12

N. Young County

Continental et al	1-Campbell	TEL	T.D. 940	Dry
Reed et al	1-Spear	Tyner	T.D. 595	Dry

PANHANDLE DISTRICT

Collinsworth County

Wishkamper	1-Fee	H&GN	T.D. 2625	Dry

Gray County

Gulf	1-Bowers	H&GN	2890-3003	2008
Shamrock	1-Chapman	H&GN	2840-2862	250

Hutchinson County

Amarillo	1-Ingerton	H&TC	T.D. 3025	70M
Amarillo	6-Bivens	H&TC	2175-2630	77M
Roxana	1-Cockrell	D&SE	2865-2886	8404

WEST TEXAS

Crane County

Magnolia	10-O'Keefe	Univ.	2935-2963	90
Tidal	7-Univ.	Univ.	2883-2925	500
Gulf	37-McElroy	GCSD	2769-2897	360
Tidal	2-Univ.	Univ.	2780-2906	1060

Crockett County

Kirby et al	1-Powell	EL	2572-2594	500
Gulf	1-Thompson	I&GN	988-990	1127

Howard County

Marland-Texon	1-Harding	Cockrell	3158-3188	35
Magnolia	7-Chalk	W&NW	1651-1680	40

Mitchell County

Cal. Co.	8-Womack	TP	2880-3075	55

Pecos County

Red Bank	1-Smith	GCSF	1579-1624	380
Red Bank	1-Robins	T&St. L.	T.D. 3512	Dry

Upton County

Roxana	28-Bowen	GCSF	2124-1252	60
Tidal	2-Burleson	Nidiver	2075-2090	40

Winkler County

Murchison et al	1-Leman	PSL	2620-2655	1300&25 M

Yates Field Now Capable Of 175,000 Barrels

TULSA, Oct. 1

COMBINED actual and potential production of the Yates field, eastern Pecos county, Texas, stood at about 175,000 barrels daily at the beginning of the prorating program that went into effect today. Present actual production is in line with the 30,000 barrels daily of market outlet provided by Humble Oil & Refining Co., which outlet will be increased to 44,000 barrels daily when the Illinois Pipeline Co. completes its facilities from the field to Del Rio, sometime between Oct. 15 and Nov. 1, next.

Officials guages made Sept. 28-29 on the basis of one-hour tests of individual wells in the field, for the purpose of determining proration percentages, showed the 19 completions in the Yates area were capable of producing 166,608 barrels daily. These figures did not include four new wells of the Humble, Roxana Petroleum Corp., and the Marland-McMan partnership, in the northwest part of the field, which were each showing for 100 barrels an hour in their completion stages. These wells were to be taken into account in the first proration period, from Oct. 1-15, thereby increasing the field capabilities by something in excess of 9,000 barrels above the Sept. 29 figures mentioned.

Showings made by wells of the Mid-Kansas Oil & Gas Co., and Transcontinental Oil Co., principal operators in the field, entitled them to roughly 75 per cent of the production marketed under the prorating program for the first semi-monthly period. A similar guage to be made before Oct. 15 will determine the percentage figure for the succeeding 15 days.

The most significant result of the guage which proceded the initial prorating period was the fact that it cleared up many wild rumors given currency throughout the industry about the alleged failure of the pool to measure up to producing capabilities with which it had been previously credited. It also set at rest similar wild reports of alleged encroachment of bottom-hole (sulphur) water into the main part of the immense structure that has been termed the world's greatest shallow oil field.

There have been no further incursions of water in the field than the showings which appeared in three east edge wells about two weeks ago. Even the affected wells are producing oil in some quantity and one of them, the A-1 Yates of the Marland Oil Co. of Texas, tested 400 barrels in the one-hour guaging period, or at the rate of 9600 barrels daily of clean oil. It had been previously shut in for a time after making about 7 per cent water one day last week.

The Gulf Production Co.'s No. 1 Thompson, which made upwards of 30 per cent water after extending the field across the Pecos river into sec. 71, Crockett county, is good for 465

Completions in Oklahoma and Kansas, Week Ended October 1, 1927

OKLAHOMA

Carter County

Company	Wells No.	Location	Depth	Init. Prod.
Magnolia	13	NEc SE NE 10-2-3	2375-3400	33

Cleveland County

Wise Oil	1	SWc NW 25-6-1 E	4515	Dry

Creek County

Stienberger-Smith	1	SEc NW NE 19-19-8 E	2635-2650	3M
Empire	1	SWc NW Slm 36-15-7 E	2590-2634	45
Roxana	1	NEc NW NW 15-15 8 E	3208-3220	13½M
Cole	4	SWc NW SE SE 13-17-10 E	2408 2425	60
Wright	18	NEc SW NW 24-17-10 E	1830-1870	70
Independent	1	SEc SW NE 18-14-10 E	3411-3424	536
Cross et al	1	C NW SW 32-18-11 E	2880-2885	Dry
Cumberland	3	NWc NE SE SE 13-17-10 E	2799-2816	Dry
Liza Tim Oil	3	CSl SW SW 9-17-11 E	T.D. 2570	Dry
Emery & Son	8	SWc NW SW NE 21-16-9 E	T.D. 3316	Dry

Garfield County

Roxana	1	SWc NE 29-23-4 W	T.D. 6308	Dry
Beopple et al	1	NEc SW SW 20-22-3 W	T.D. 2850	Dry

Grady County

Merridian	2	NWc NE NW 2-4-8 W	2128-2148	35M
Sinclair	2	NWc SE SW 11-4-8 W	2250-2420	10M
Carter	1	NEc NW SW 8-3-5 W	2040-2067	22
Carter	2	SWc NW NE 21-3-5 W	1895-1906	52
Carter	2	SWc 22-3-5 W	1838-1840	15
Marland & Joe Ray	2	NWc SE NE 17-3-5 W	T.D. 2375	Dry
Magnolia	1	NWc SE NW 25-3-5 W	T.D. 4115	Dry

Haskell County

San Bois	1	NWc 24-8-20 E	835-880	½M

Hughes County

Kingwood et al	1	C NW SW 15-10-9 E	3257-3283	43M
Mid-Cont	1	SWc NE 16-10-9	T.D. 3299	Dry

Kay County

Harris-Hahn	2	SWc SE NE 17-29-1 E	754-756	1½M
Comar	2½	SWc SE SW SE 5-28-1 W	1579-1590	2½M
Larutan Gas	2	NWc NE NW 30-27-1 W	733-743	½M
Comar	1	NEc 29-29-1 W	T.D. 3517	Dry
O'Kansas	1	NEc SW 29-27-1 W	T.D. 3470	Dry
Mid-Co. Corp.	1	NEc NW 31-25-1 W	T.D. 1600	Dry

Lincoln County

Carter	1	SWc SE SE 30-17-5 E	T.D. 4333	Dry
Wilcox	1	NEc 18-13-6 E	T.D. 4376	Dry

Logan County

Carter	1	SWc NE SW 32-19-3 W	T.D. 6218	Dry

Muskogee County

Stein et al	4	SWc SE NW SW 24-15-17 E	T.D. 1428	Dry

Okmulgee County

Sheldon et al	1	CEl SE SW 15-13-12 E	2884-2886	535
Misener et al	3	CNl NW SE 10-15-14 E	984-997	50
Neal et al	1	SEc 17-14-13 E	T.D. 2957	Dry
Briscoe et al	1	CNl SW SE 26-15-12 E	T.D. 2220	Dry

Osage County

Osage	380	CSl NE SE 6-27-11 E	1869-1876	2¾M
	377	NEc 6-27-11 E	721-763	1¼M
Parker	1	NEc NW NW 11-26-6 E	2807-2855	835
Peters	2	NWc SW 26-25-9 E	2115-2131	90
Okla. Nat. Gas	774	SEc NW SE 33-32-11 E	1580-1585	4½M

Payne County

Wood Oil Co.	1	SWc SE 33-19-5 E	2119-2134	10M
Marland et al	1	C SE NW 10-19-1 W	T.D. 5105	Dry

Pottawatomie County

Magnolia	2	NWc SW 4-9-5 E	4331-4334	607
Independent Darby	4	NEc SE NE 8-9-5 E	4328-4334	34
Mid-Continent	6	SEc NW SW 9-9-5 E	4406-4411	190
Pierce	1	NEc SE NE 25-7-3 E	3889-3898	467
Magnolia	1	SWc NE 36-7-3 E	3790-3800	10
Gypsy	5	SEc SW NE 16-9-5 E	T.D. 4368	Dry
Mid-Kansas	1	NEc SW SW 34-9-4 E	T.D. 3960	Dry

Seminole County

Barnsdall	4	NWc SE SW 10-9-5 E	4340-4348	43M
Gypsy	3	NEc NW NE 10-9-5 E	4240-4268	2527
Gypsy	4	NWc SW NE 10-9-5	4428-4434	1430
Gypsy	1	NEc SE NE 10-9-5	4350-4351	4724
Magnolia	2	NWc SW SE 10-9-5	3625-3667	100
Magnolia	1	NEc NW SE 10-9-5	4342-4353	63
Magnolia	3	NEc SW SE 10-9-5	4356-4358	16
Texas	2	SWc NW 10-9-5	4358-4366	3180
Gypsy	3	NWc SE NE 12-9-5	4246-4265	3202
Sinclair	2	SEc NE NW 12-9-5	4346-4361	1905
Skelly	2	NEc SW NW 12-9-5	4360-4384	1633
Pure	3	SWc SE NW 3-9-6	4467-4475	480
Pure	5	SEc NW 3-9-6	4706-4710	1295
Carter	12	NWc 23-9-6	4214-4368	280
Carter	4	SWc NE SE 34-9-6	4111-4175	41
Sinclair	3	SWc NW NW 35-9-6	4018-4126	890
Gypsy	4	NWc NE SE 10-8-6	4050-4294	152
Sinclair	4	NWc SW 11-8-6	4030-4070	2339
Tidal	1	SWc NE NW 13-8-6	4188-4208	1435
Pure	20	NWc NE SE 14-8-6	4331-4343	534
Gypsy	3	NWc SE 15-8-6	4281-4393	526
Mid-Cont	1	SWc 36-8-6	4232-4241	800
Prairie	9	NEc NW NE 11-9-5	4282-4306	3815
Prairie	3	SEc SW SE 3-9-5	4288-4308	2185
Prairie	6	NWc SE SW 10-8-6	4186-4216	60
Sinclair	2	NEc 9-10-8	4219 T.D.	Dry
Shaffer	1	NWc SE SW 14-8-6	4889 T.D.	Dry
Magnolia	1	SEc NE 9-8-8	4315 T.D.	Dry
Amerada	1	SEc NW 2-7-5	4780 T.D.	Dry

Stephens County

Franklin	6	SWc NE NE 24-1-4 W	2772-2834	35

Tulsa County

Sheridan et al	1	NWc SW 10-16-12 E	1948-1956	3½M

Wagoner County

Williams	3	CNl SE NE 12-18-17 E	T.D. 320	Dry
Webb et al	1	SWc 8-18-18 E	T.D. 400	Dry
Dickenson	1	SEc NE SE NW 6-17-15	T.D. 3152	Dry
Perry	3	SEc NW NE 7-17-16 E	T.D. 1550	Dry
Lampton	1	NWc SW SE 9-15-16 E	T.D. 1137	Dry

KANSAS

Coffey County

Ark. Fuel	1	NWc SW 23-22-13 E	1803-1809	25

Cowley County

Hull et al	2	C N½ 32-31-7 E	3606	Dry

Elk County

Union Gas	2	C SE SW 11-22-13 E	1090-1095	.3M
Sealy et al	3	C SE NW 12-30-9 E	2540	Dry

Greenwood County

Roxana	3	SWc NW NE 23-22-11 E	1872-1894	100
Polhamus	5	SEc SE SW 35-25-10 E	1997-2019	45
Rogers et al	1	SWc NE Lot 27-2-26-10 E	2002-2022	75

McPherson County

Prairie	1	SWc SN NW 6-21-2 E	3580	Dry

Reno County

Phillips	1	NEc 21-22-5 W	4024	Dry

Sumner County

Roxana	4	NEc NW SW 25-31-2 E	1845-1900	50

Woodson County

Reeser et al	1	SWc NE NE 13-25-15 E	1415	Dry

barrels daily with 420 pounds of back pressure on the well. The Allsman & Bell small riverbed well that never made more than 175 barrels daily at its best, is good for 87 barrels daily, all it will make.

A recapitulation based on the accompanying table of actual production guages on an hourly basis and the estimated 24, hours yield figures shows the following per well per day average production estimates for the field:

Company	Wells	Bbls.
Mid-Kansas & Transcontinental	12	11,086.00
Other Companies	7	4,796.94
Field Average	19	*8,768.87

*These figures to be modified by inclusion of four wells completed ahead of prorating date of Oct. 1, but not officially gauged at time the Sept. 28-29 tabulation was made.

TABLOID RECORD, YATES FIELD ACTUAL AND POTENTIAL PRODUCTION

Company-well	Hourly production gauge (barrels)	Daily production based on hourly guage (barrels)
Yates B-1	819	19,656
Yates B-2	228	5,472
Yates A-4	302	7,248
Yates A-5	214	5,136
Yates A-7	786	18,864
Yates A-1	150	3,600
Yates A-2	833	19,992
Yates A-3	100	2,400
Yates A-6	1,051	25,224
Yates C-1	222	5,328
Yates B-3	658	15,792*
Smith-Taylor 1	180	4,320
Total wells 12	5,543	133,032
Other Companies—		
Marland-McMan Yates 1	307	7,368
Simms Smith 1	112	2,688
California Yates 1	487	11,688
Gulf Smith 1	70	1,680
Marland Yates A-1	400	9,600*
Gulf Thompson 1	19.38	465†
Allsman & Bell Riverbed 1	3.64	87‡
Total wells 7	1,399.02	33,576
Grand Total wells 19	6,942.02	166,608

(Guage figures yet to be made official at time report was compiled on the following wells in stage of completion and which were to be included in pro-rating program effective Oct. 1, 1927: Marland & McMan, Nos. 3 and 4, showing for 100 bbls. hour; Roxana No. 1 Smith showing for 100 barrels hour; Humble No. 1 Smith showing for 100 barrels hour.)

*Through one 4-inch line.

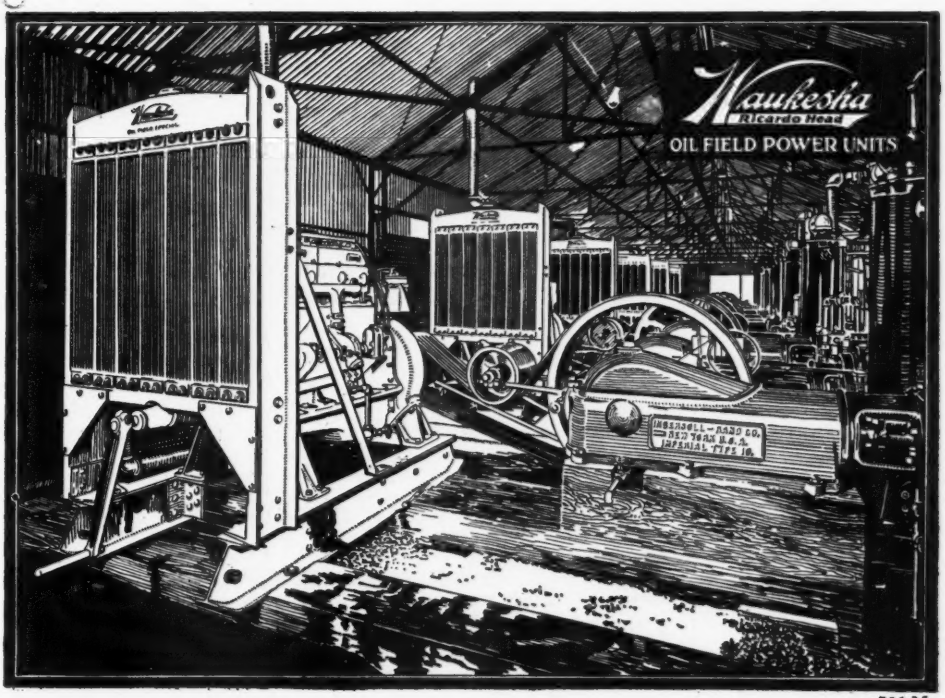
†Through one one-fourth inch choker.

‡All well will make.

(Telegraph Bulletin)

TULSA, Okla., Oct. 4.—Delaney et al No. 1 Jackson in the northwest, northeast, southwest of Sect. 81, Block 2, B. H. and G. N. survey, Gray County, Texas, has 6144 barrels of production the first 24 hours at 2,844 to 2,884 feet. Barkley et al No. 1 Duffer subdivision 13, McLennan school land survey, Eastland county, Texas, produced 25,000,000 feet of gas and sprayed 50 barrels of oil at 2,982 to 2,882 feet. This is a quarter mile extension to the Sibley pool.

Waukesha Driven Gas Lift Plant at Bowlegs, Oklahoma



p-736-M

Turning Waste Into Gain

7,500,000 cubic feet of gas per day is the capacity of this plant—sufficient to lift 5000 or more barrels of oil and serve as many as 17 wells. 125 H. P. Waukesha "Ricardo Head" Engines of the heavy duty Oil Field Type, running on waste gas, furnish the power necessary to operate these Ingersoll-Rand Imperial Type 10 Compressors.

These Waukesha heavy duty four-cylinder engines are built especially for this compressor drive service. 80-100 and 125 H.P. are the sizes available. They have unusually large radiators to provide adequate cooling under Oklahoma, Texas and Venezuela temperatures, even when enclosed in a house as shown above. Portable Oil Field Units are also available for driving oil, water and mud pumps, also rotary or cable drilling rigs. Write for our "Gas Lift" book if you do not have a copy.

P-761-L

OIL INDUSTRY EQUIPMENT DIVISION

WAUKESHA MOTOR COMPANY

Waukesha Wisconsin

New York	Kansas City	Denver	Tulsa	Houston	San Francisco
8 W. 40th St.	*V. L. Phillips Co.*	*Wilson Machy. Co.*	*C. F. Camp Co.*	*Portable Rotary Rig Co.*	*C. A. Watts*

Exclusive Builders of Heavy Duty Gasoline Engines for Over Twenty Years

Cities Service Ads Build Goodwill Among Customers and Employes

By J. C. Chatfield

N. P. N. STAFF WRITER

TULSA, Sept. 17

AFTER several months' study of its marketing problem the Cities Service Co. began a national advertising campaign this year, using magazines, newspapers, billboards and radio.

The campaign was mapped out by one of the foremost advertising agencies of the country. Many of its features should be applicable to the advertising needs of distributors of petroleum products that operate in only a single community or larger organizations that cover several counties or several states.

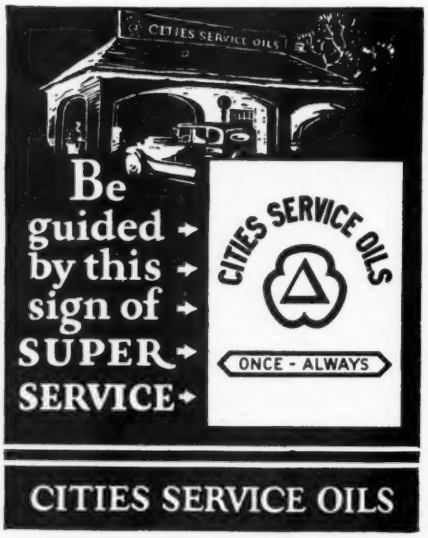
The Cities Service Co., a unit of the Henry L. Doherty interests under which the petroleum division operates, set up a group of objectives which it hopes to attain in its advertising campaign. These objectives, aside from the selling of securities and maintaining their value, are:

1. To sell the Cities Service organization.
2. To sell Cities Service oils and gasoline.
3. To make the Cities Service trade mark nationally known and nationally respected as the symbol of a great and efficient organization.
4. To build goodwill for the parent company and its subsidiaries in their respective operations and localities.
5. To create a sound understanding of the balanced management of the company, and of the efficiency and capacity of this management.
6. To strengthen the fine morale of the employes by giving them, collectively, a more complete uniform picture of their organization.

Company executives believed the advertising campaign would not be successful unless employes made full use of it in their sales efforts. For that reason a great deal of preliminary work was done among employes to create a demand for advertising to help sales and to indicate how it might be used.

Before any advertising was begun executives of the distributing division and representatives of the advertising agency traveled through the country talking advertising with employes. All day conferences were held in which employes were told how they could use advertising and why they should use it to insure its success as an aid to selling.

Tank wagon drivers that call on the farm trade, were asked to call the attention of customers to Cities Service advertising in farm journals, in the daily or weekly paper published at the nearest town or to suggest that the broadcasting program every Friday evening was well worth listening to. Service station attendants were asked to clip advertisements as they appeared in magazines and newspapers for prominent posting.



Sample of advertising used by Cities Service Oil Co.

The salesmen that call on jobbers and independent station operators have been taught to use the advertising effectively. One salesman has not been content to carry clipped advertisements from the magazines. He carries the whole magazines, lugging in a big stack to show the prospective customer what his company is doing to aid its dealers to sell.

Some direct mail advertising has supplemented the newspaper and magazine work. Frequent broadsides or large folders are sent to dealers. These contain copies of the advertisements that have been run. Small sales stuffers are enclosed in invoices to both retail and wholesale customers.

The newspaper advertising program is one of the most interesting features of the campaign. The advertisements are run twice each week in the territories served. One advertisement is carried on Friday and the other on Tuesday.

Many advertisers choose Sunday because they feel that the Sunday papers are read more carefully on that day than any other. The Cities Service Co. vetoed Sunday advertising on the theory that the immediate gasoline and oil requirements probably had been bought the previous day and the message of the advertisement might be forgotten before time to fill up again.

Watch for This and you'll play safe!
CITIES SERVICE OILS
ONCE - ALWAYS
Get the utmost in fuel efficiency—speedier starting, faster acceleration, greater mileage, increased flexibility, minimum carbon.
CITIES SERVICE GASOLINE

Another example of effective advertising used by Cities Service Oil Co.

THIS year the company is buying space in 142 newspapers in 113 cities in 20 states. At the end of the year the company will have run 176,069,159 advertisements based on circulation figures, since the first of April. This is in addition to the farm paper and national magazine advertising and the notices of radio programs which are carried in 57 newspapers in 21 cities.

To check the interest in radio programs the company has been announcing each week that anyone interested might have a personal budget book to keep a record of expenses by writing the company. An average of 2,000 requests a week have been received.

The same principle of continuity of advertising is being maintained in the national magazines as in the newspapers. Advertisements are staggered almost entirely in the weaklies. Monthly magazines were not used because they are mostly issued about the same time of the month. In the popular field the company has been using the Saturday Evening Post, the Literary Digest, Liberty, Collier's and Time.

"Overproduction is the direct result of too much drilling" is the statement made at the Conference of leading oil executives in New York City the week of May 8th To many this may appear a simple, obvious fact

Yet it cannot be too clearly understood that regulation of over-production *must begin and end in the oil field* The refinery is the place where crude oil, having been removed from the ground, must be made to yield its maximum gasoline content The refinery should be the last place in the world to practice regulation except only regulation of wasteful operating methods such as using three barrels of crude when two barrels will serve the needs

Universal Oil Products Company
Owner of the Dubbs Process
310 South Michigan Ave
Chicago, Illinois

MORE AIR NEEDED? HERE IT IS.

The modern service station is finding it necessary to install Air Compressors which have greater air capacity. Air is needed for engine cleaning, for paint spraying, for lifts and for many other purposes. We have been preparing to meet these needs. The smaller compressors are being retained for tire inflating and larger capacity units are being installed for the other work. In some cases smaller ones are being removed and the larger types are put in to carry the whole load. However you plan it, you must

SEE THE "DAYTON G-8" BEFORE DECIDING

Two-Stage Compressor.

60 gallon Tank.

8 cub. feet capacity.

Built to do the increased work.

The only two-stage compressor in the world that is built without connecting rod, cotter pin or crosshead pins. Nothing to get out of order; no bolts to come loose and score the cylinder. Just keeps on working.

Send for Bulletin.

The LUCAS PUMP & TOOL COMPANY DAYTON, OHIO.

DAYTON AIR COMPRESSORS

425 Valley St. Dayton, Ohio, U. S. A.

NATURAL GASOLINE

Grades A · AA · B · BB · C

CONTRACT OR SPOT

WILLOCK OIL CORPORATION

First National Bank Building · Phone Atlantic 3110

PITTSBURGH, PA.

52 Years Experience · It Counts

Missouri Jobbers Fight Higher Texas

KANSAS CITY, Oct. 4.—A movement to forestall, by constitutional amendment, future increases in state gasoline taxes and automobile license fees was approved by the Missouri Oil Men's Association at its annual meeting here, just preceding the Four State Jobbers meeting. The idea is one initiated by the Missouri Automobile Club, but the oil jobbers agreed to contribute $1000 to help circulate an initiative petition for the amendment.

Missouri is now building roads under a $60,000,000 bond issue to which present taxes are pledged. The proposed amendment would continue the plan for 35 years, voting an additional $120,000,000 of road bonds and providing that the legislature would not have power to increase taxes except in certain emergencies. The Missouri jobbers will contribute 10 cents for each car of gasoline sold last year to the promotion fund in the belief that, unless the amendment is adopted, the state gasoline tax will be increased by the next legislature.

All officers of the Missouri Oil Men's Association were re-elected for another year. They are: George S. Allee, Kansas City, president; C. L. Ackert, of Pierce Petroleum Corp., St. Louis; W. Adams of the Purity Oil Co., Springfield; W. H. Smith, of the Red Eagle Oil Co., Mason; and John G. Gibson, Capital City Oil Co., Jefferson City; all vice presidents; C. W. Elstun of the Benzo Gas Motor Fuel Co., Kansas City, treasurer. Directors include W. T. Atkins, Skelly Oil Co., Kansas City; Bert Bertram of the Bertram Naphtha Co., Kansas City; Sam Rotenberg, Puritan Oil Co., St. Louis; C. B. Hood, Joplin Oil Co., Joplin; George Koertel Liberty Bell Oil Co., St. Louis; A. L. Land of the Land Petroleum Co., Warrensburg; W. R. McCain, Purity Oil Co., Springfield; Paul McMahon, Independent Oil Co., Seymour; E. L. Martin, Manhattan Oil Co., Kansas City; H. E. Miller of the Miller Oil Co., Festus; H. H. Mutz, Independent Oil Co., Marysville; and Walter Ware, Lubrite Refining Co., St. Louis.

Correction

Wording of the item concerning the Cincinnati Ball Crank Co. manufacturing high pressure guns and other lubricating units under Bassick Mfg. Co.'s patents, which was published on page 168 of the Sept. 21 issue of NATIONAL PETROLEUM NEWS, might be misleading. The Cincinnati company will make under Bassick license only the products it has been making, but not all Bassick products can be manufactured by the Cincinnati Ball Crank Co.

Circulating Oil in Shell Stills Increases Throughput Capacity and Reduces Costs

By C. W. Stratford

C. W. STRATFORD

Mr. Stratford's is a name well known to refiners in general. Nearly every refiner knows that he has done something that greatly improves the efficiency of shell stills at the plants of the Associated Oil Co. in California, of which company he is technologist. So far as we know, information as to just what Mr. Stratford's invention is has never been made public before.

In the accompanying article Mr. Stratford himself tells what he has discovered about improving the efficiency of shell stills from the combustion and throughput standpoints, and how his oil circulating device operates.

IN RECENT years, over-production of refining crude and consequent keen competition in the marketing of petroleum products have impressed refiners with the necessity of actively seeking better and cheaper methods and equipment for all refinery operations. Particularly is this true of distilling and fractionating units, with which the present discussion is chiefly concerned.

The development branch of oil organizations naturally falls heir to such major problems of economy and betterment. Intensive study and some good fortune rarely fail to show a way of attaining the objectives. As an example, the development of oil circulation in shell stills was the result of trying to improve methods of heating oil and, incidentally, to save capital investment, so far as possible, in existing shell stills, otherwise intolerably obsolete.

In the beginning, a simple analysis of investment and of operating costs immediately disclosed some rather surprising facts. It was found that crude stills and poorly fractionating re-run stills, combined, had cost between $40 and $60 per barrel of daily charging capacity. Fuel rates were about double those of other heating systems. Circulatory heat represented too low a percentage of the total heat required for distillation. Heat exchangers, condensers and cooling systems, were open to much improvement.

Large quantities of "agitating" steam were used in the stills to reduce distilling temperatures and thereby avoid burning of still bottoms. Stills were run in batteries of four, five or six and, being charged with crude fed from a distant pump house, were difficult to keep in balance—charging rates against firing rates. Commercial recovery of gasoline components was much below actual gasoline content of crude. Hence, improved recovery represented one of the great possible savings.

In view of the normal advance in the industry, it was obvious that money invested in such obsolete equipment could not possibly show desired earning. It therefore appeared that increase in unit heater capacity, combined with a complete re-balancing and refinement of all accessory equipment, offered the best chance of general betterment.

The first step was to determine the actual capacity of stills in regular battery operation. Stills used were 10 by 40 and 12 by 45 feet. For these tests, all steam was cut out of distributing headers in stills and a higher oil temperature was maintained for recovery of the same distillates—approximately 50° Fahr. to 100° Fahr. higher than that required by steam distillation. Under such conditions, it was quickly learned that the critical, maximum capacities varied between 1200 and 1500 barrels daily charging rate. Still bottoms were usually coked within a few days under such firing.

WHILE the low rates thus obtained were a decided revelation, they demonstrated beyond a doubt that some means had to be developed for rapidly moving the oil over the inner surfaces of the still sheet before greatly increased capacity in shell stills could be hoped for, especially at the higher temperatures required when running without steam (600° Fahr.). High flame burst temperatures of good combustion also demanded rapid oil movement. Elimination of "agitating" steam in stills inclusive of perforated arches and was imperative because its use added another superfluous element to stilling costs.

Viewing still operation from the standpoint of external heat radiation to the atmosphere brought out the desirability of changing from the operation of a number of stills in a service battery to that of operating a single still as a continuous complete unit.

Combustion has always been a troublesome phase of still operation. When firing with oil, and atomizing with steam, excess air varied between 100 and 150 per cent with the old systems, to say nothing of atomizing steam costs. The old combustion set-up was logically changed to forced draft, with heated air (400°/500° Fahr.) and to mechanical atomization, thus reducing excess air to under 20 per cent and doing away with steam.

The side walls and bottoms of the old settings had a limited life and were given to rapid disintegration and slagging. Heat penetration through the bottom had a deleterious effect on the concrete foundations. Air-cooled side walls and bottoms were substituted for the former uncooled masonry. Several forms of dutch ovens were experimented with, inclusive of perforated arches and various baffling arrangements within the combustion chamber. Perforated arches could be maintained for a considerable time before melting down. However, when any form of dutch oven or perforated arch was used, with correct air-fuel ratio, the inner surfaces of these chambers approached temperatures well above those of the softening points of the best quality of fire brick.

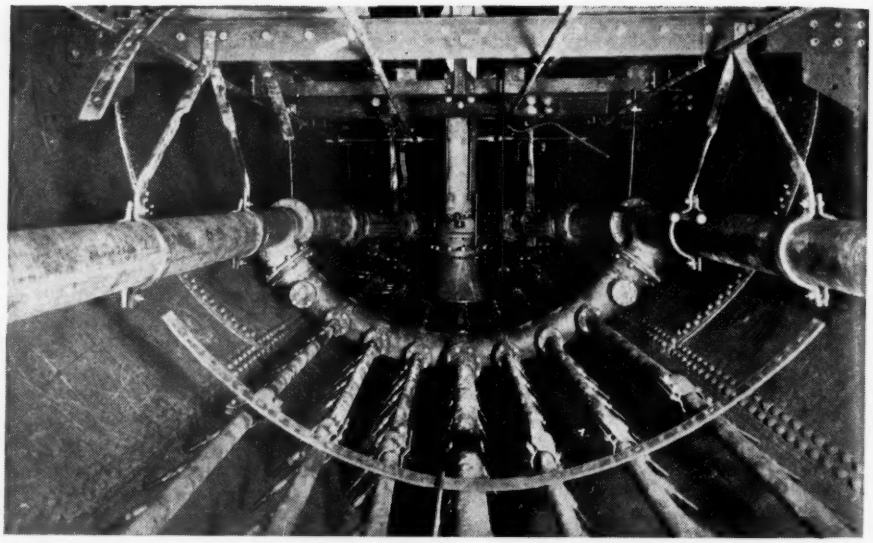
FOLLOWING many srious burnings of the still sheet caused by localization of high temperature combustion and rapid softening of the fire walls, a point was reached where a different combustion chamber had to be found or the whole study given up. Up

to this time practically all traditionally good fire box design had been tried out. It took more than ordinary courage to cast time honored precedent aside. Something decidedly different surely could not give worse results than we had already encountered.

THE height of still above furnace floor was, therefore, increased to approximately the diameter of the still and all former, longitudinally sloped fire box fillings, brick bats, baffles and supposedly protective arches were removed, leaving a large, simple, empty box. In one end of this box a single mechanical atomizing burner furnished efficient combustion. Temperatures of combustion gases entering the stack duct were decidedly lower than those met with in any former combustion chambers. Inexpensive air cooling of side walls and bottoms entirely corrected all refractory troubles.

It goes without saying that much money and time were spent on combustion development. Had the traditional fear of radiant heat at high temperatures not been so well grounded, as well as highly respected by oil men, good results would certainly have been achieved in a much shorter period of time.

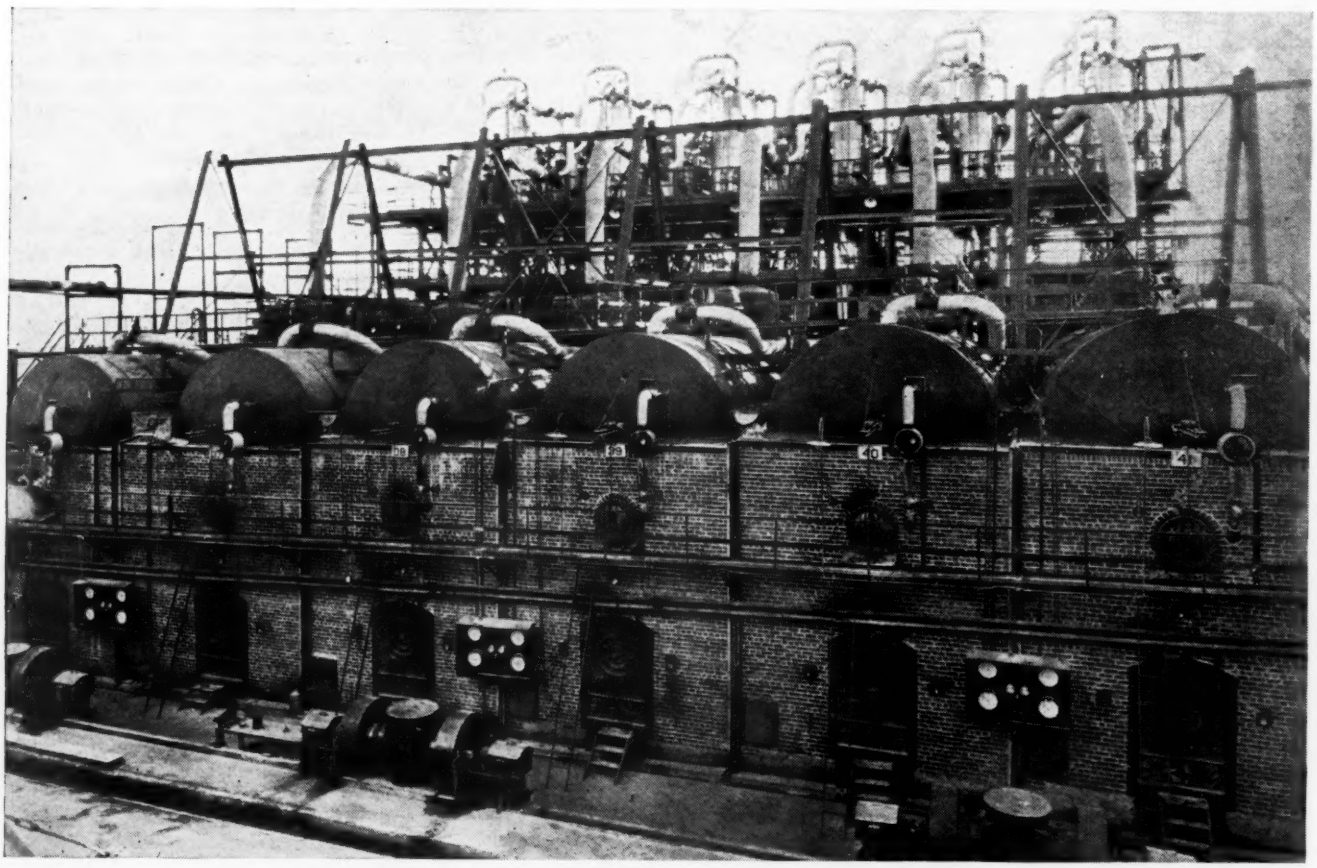
One of the most outstanding discoveries made during this investigation was that no form of protective heat screen is of any sensible value when interposed between the combustion flame burst and the oil heating surface, provided this surface has been made to furnish efficient refrigeration to the usually greatly feared flame burst by oil circulation.



Interior of 12 by 45-foot shell still showing circulating pump distributing headers and laterals carrying discharge nozzles

Fuel rates in the new setting varied between 0.9 per cent and 1.3 per cent by volume, this variation being caused by water content in crude and by percentage of crude vaporized. Circulatory heat, of course, also has a marked influence on fuel rate.

With good combustion on the lower side, now let us consider the liquid side of the still sheet. Experimentation in glass shows that steam does not cause liquid to flow rapidly over the bottom surface but rather agitates and displaces it. Steam jetted against the surface momentarily insulates it and prevents uniform heat transfer to the liquid. This observation indicated another good rea-



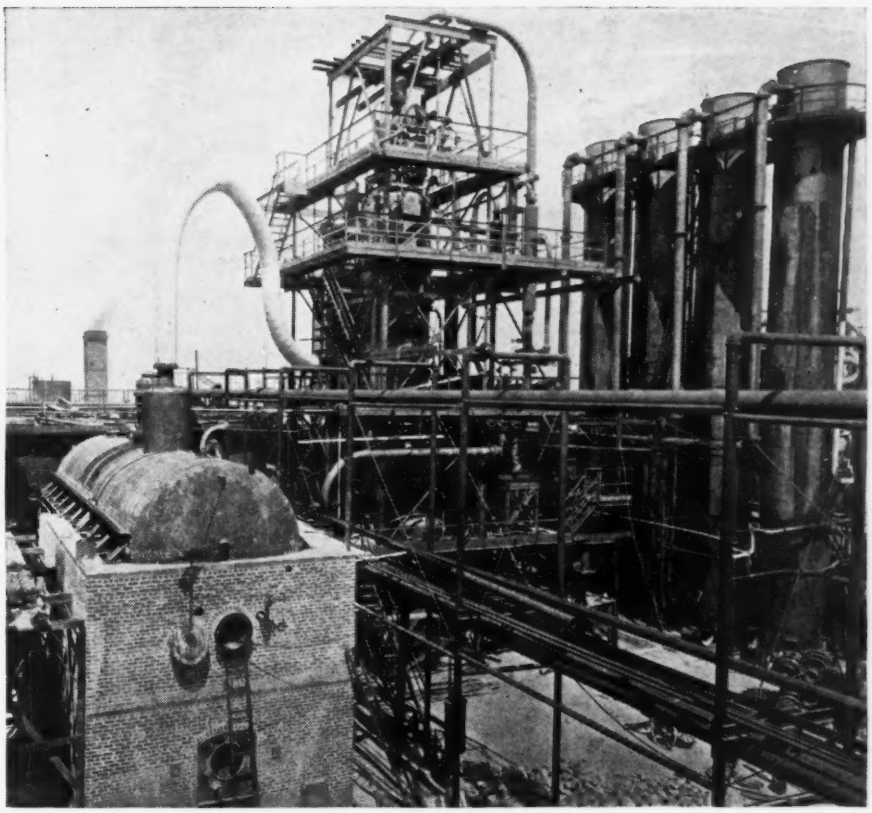
Battery of 12 by 45-foot shell stills equipped with oil circulation and running as separate units

son for dispensing with agitating steam in stills.

Many means of moving oil in a still were considered, such as rotating paddles, multiple steam ejectors and similar devices. All such were discarded for one reason or another, principally because of low mechanical efficiency in moving the oil or because of creating cumulative wave disturbances in the still which promote entrainment or momentary exposure of the fired sheet to coking. Neither did pumping oil through perforated steam headers against the bottom give desired results. It is curious how much time and thought can be given to a problem for which a very simple solution is ultimately found.

AT THIS stage, we decided to formulate a problem sheet more clearly defining the true objective. This objective consisted of laying down a continuous and rapidly moving sheet of oil covering the entire heated surface without appreciably wasting energy in churning the entire body of oil. A jet of water striking the flat bottom of a wash basin in bright light presented exactly the liquid sheet flow desired. Trying to blow off a card lying freely on the end of a spool, suggested one means of controlling the thickness of a rapidly moving liquid sheet. Continued experimentation in glass ended in the selection of a series of evenly spaced nozzles through which oil was forced by a pump, manifestly the most effective means of moving a liquid. The velocity of oil issuing from these nozzles was fixed at about 85 feet per second, and the velocity of sheet flow over the still bottom certainly is not far from this figure.

It is interesting to note that recent work in hydraulics with jets of similar character delivering liquid streams against a plane surface, reveals that a jet of liquid creates its own hydraulic cone and turns a 90° corner with an astonishingly low loss of energy amounting to about 3 per cent.

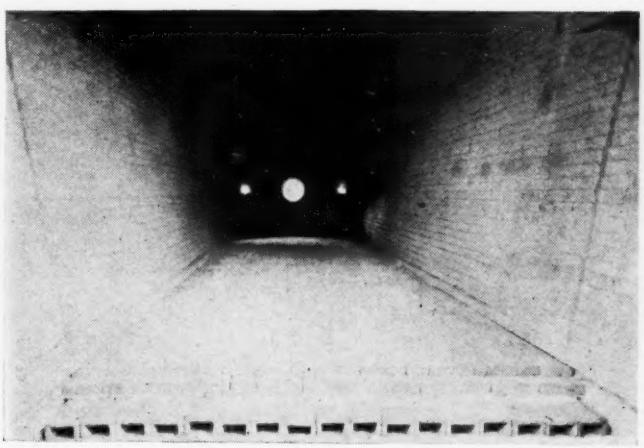


Latest 12 by 45-foot oil circulation still and fractionating head nearing completion

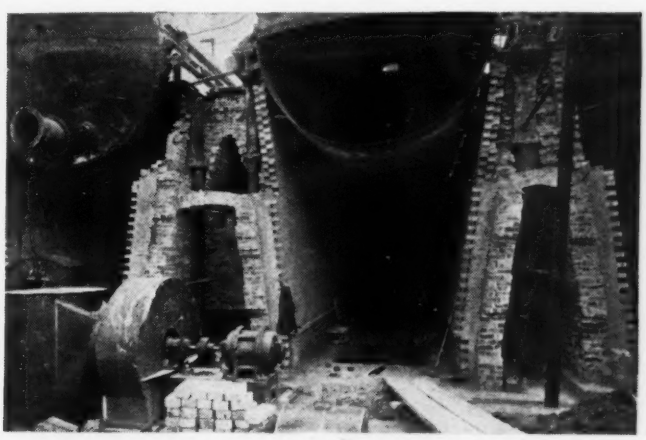
FOR the purpose of uniform oil distribution, a header was installed in the first 10 by 40-foot still. Residuum from the still was led to an ordinary centrifugal pump placed outside which discharged it under pressure through the manifolding and nozzles, jetting against the still bottom. The capacity of the original pump was 750 gallons per minute. With this rate of oil circulation, the capacity of the still was raised to a top of 5300 barrels per day, at which capacity, condenser surfaces were insufficient.

It was easy to operate the still at an average charging rate of 4500 barrels per day, vaporizing above 40 per cent. Because of serious fire hazards entailed by the outside pump, it was necessary to develop an entirely new type of vertical centrifugal pump which could be enclosed within the still. Four stills of this size were so equipped, each operating as a separate complete unit.

The next application of oil circulation was in six 12 by 45-foot stills. Circulating pump capacity of 1800 gallons per minute was chosen but actual discharge in service was only 1100 gallons per minute, owing to vaporization within the pump. A daily charging capacity of 6500 barrels was readily maintained in each of these stills. At first it appeared that this was more oil than could



Still setting showing air cooled floor



Oil circulation heaters under construction showing air cooled side walls and floors

safely be charged into a single still. But an ambitious trial of one of these heaters showed a capacity of 9400 barrels per day, before condensers and other equipment went out of balance.

RECENTLY one more 12 by 45-foot still has been equipped with oil circulation. In this instance, the capacity of the circulating pump was fixed at 3600 gallons per minute as an assurance that sufficient oil would be jetted against the bottom. The spacing of the nozzles on the bottom was considerably shortened from former design. This last still has no difficulty in carrying a rate of 8500 barrels per day, vaporizing between 42 and 50 per cent. At 9200 barrels, the still capacity over-runs the fractionating equipment attached to it. From the appearance of combustion under the still, a capacity of 10,000 barrels per day, 50 per cent vaporized, can easily be maintained with a probable top rate, on dry crude, of between 12,000 and 15,000 barrels. All tendency to deposit salt or coke on the bottom has been eliminated. By increased circulation of oil, direct exposure of the still bottom to radiant heat at the highest level is now practiced with no fear, whatever, of damage to it.

In passing it might be remarked that the California crudes charged to oil circulation stills have contained a large percentage of water emulsion of high salt concentration, appreciable quantities of salt and separable asphaltic bodies.

Summary

Shell still heaters equipped with oil circulation can be constructed at a lower cost than can other types.

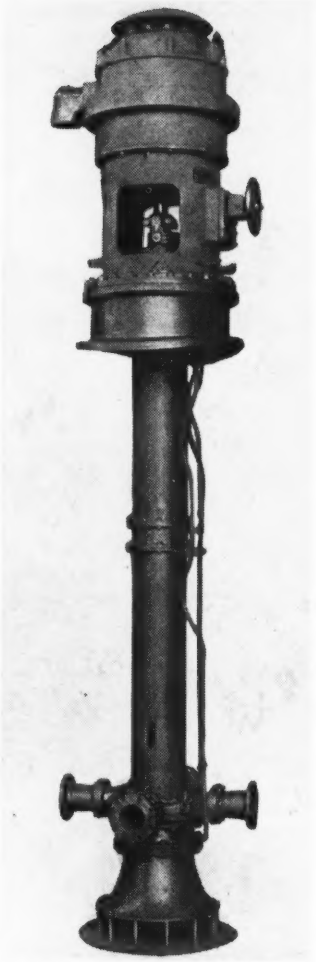
Sufficient jetting of oil against the still bottom provides a high service factor. Energy expended in cooling the heated still sheet is returned in the form of greatly increased rate of heat transfer.

A combustion system comprising pre-heating of the air, forced draft, discharging all of the air and fuel through a single mixing venturi into the combustion chamber and mechanical atomization of the oil, permits of most efficient burning of the fuel with a minimum of excess air. This system furnishes great flexibility of combustion control and length and character of the flame burst.

AIR cooling of side walls and floor of the combustion chamber lowers the temperature of the working faces of the refractories so that a long life of the masonry is to be expected.

Application of a tubular convection section to the cooling gases of combustion passing to stack materially improves the over-all thermal efficiency of the heater.

It is much more necessary to design distilling units of high capacity to be entirely automatic than it is those where the rate of heat transfer is occurring at slower rates. It is also highly advisable to group all of the operating facilities under control of one stillman. This closes the interval that ordinarily exists between need of a change and the transmission of the order to other operators. Entire control of his equipment and its operation from crude charged to unit to distillates and residuum out, builds up the confidence of the stillman and results in a decided reduction of operating labor.



3600 G. P. M. vertical oil circulating pump and attached driving motor

Top of six 12 by 45-foot stills showing driving motors of circulating pumps

1927 Auto Output May be 15% Less Than 1926

NEW YORK, Oct. 1.—*Automotive Industries* this week said:

It is now fairly clear that automotive production this year will be around 15 per cent under the record-breaking year of 1926. This is approximately the rate at which the industry fell below in the first eight months of the year and the prospect that Ford production will add little to the total until the closing weeks of the year does not promise a very large fourth quarter.

Just now production is undergoing seasonal decline and the sales situation is unusually confused, with some territories reporting sharp drops from the August level and others on a level that compares favorably with last month and with the same period a year ago. Generally speaking, business is proving hard to get and factories and sales organizations are in a tense struggle to maintain volume.

Tests on Vapors Evolved During Partial Evaporation of Natural Gasoline

By J. J. Delaney

Gas Department, General Petroleum Corp.

Read before September Meeting, California Natural Gasoline Association, Los Angeles.

THE characteristics of vapors evolved during the evaporation of natural gasoline have been a matter of considerable discussion in the design of recovery systems and various other operations that are daily confronting the natural gasoline industry.

With this object in mind, a test was conducted to determine such characteristics using actual data secured from tests made in large enough proportions so that the experimental errors would be reduced to a minimum. The data secured to date is, however, limited to one definite condition, the partial evaporation of a tank of natural gasoline in actual service.

For the purpose of making test observations, a horizontal storage tank was used, having a 10,000-gallon total capacity. This tank contained 8,320 gallons of unstabilized natural gasoline, having a gravity of 87.9° A.P.I. and held under 27.5 pounds pressure.

During the test, the pressure was gradually reduced from 27.5 to 12 pounds which was the pressure registered at the finish of the test. This gasoline had been previously extracted from wet gas produced from the Santa Fe Springs field by the oil absorption method. All pipe connections were disconnected from the tank and equipped with blind flanges, to limit the possibility of vapors or gasoline leaking into the tank while the test was in progress, with the exception, however, of the connection used for venting the escaping vapors. This line passed from the top of the tank to a 3-inch Emco positive type gas meter which was installed for the purpose of measuring the expelled or evaporated gasoline vapors at atmospheric pressure. The meter was carefully calibrated prior to the test and adjusted to an accuracy within 1 per cent. A control regulator was installed before the meter and adjusted so that the flow of vapors from the tank was approximately 600 cubic feet per hour.

TEMPERATURE recording instruments were placed in the storage tank and also in the vapor line at the meter and corrections were made on these volumes of liquid and gas for the purpose of bringing all final readings to 60° Fahr. A pressure recording gauge was also installed on the storage tank and used for the readings of tank pressures as they gradually diminished. The test was conducted over a period of 22½ hours and readings were made on the tank and meter at five specified times on the first day, concluding at 6 p.m.

No further readings of the tank or meter were made until the following morning at 8 a.m., when five more hourly readings were made, the test terminating at 12 noon. Temperature and pressure recording instruments gave the necessary data on the run through the night and charts from these instruments were used in the correction of the indicated volumes.

During the 22½ hour period of the test, there were 350 gallons of gasoline evaporated, reducing the volume in storage to 7,970 gallons. The gas meter during this period had measured 13,508 cubic feet af vapors, which, when corrected, equal 13,180 cubic feet, this volume of vapors being equivalent to an evaporation of 350 gallons of gasoline, or 37.7 cubic feet of vapor per gallon.

THERE is, however, a slight correction necessary in the above figure, amounting to one-tenth of a cubic foot, due to the fact that at the start of the test, were 324 cubic feet of gas in the tank at 27.5 pounds pressure, and at the conclusion only 276 cubic feet of gas at 12 pounds pressure. This difference of 38 cubic feet must be subtracted from the corrected meter volume, bringing this volume to 13,142 cubic feet for the 350 gallons of natural gasoline evaporated and equivalent to 37.6 cubic feet of vapor per gallon.

Through the entire test and after 5 p. m. of the first day when the vapor volumes were regulated with some consistency, the cubic feet of vapor per gallon of natural gasoline evaporated fluctuated only slightly, the results averaging between 37.7 and 39.8 cubic feet per gallon. An average for the period between 5 p.m. and 12 noon the following day shows a result of 38.3 cubic feet per gallon evaporated. A data sheet covering the actual conditions of the entire test is attached.

A.S.T.M. distillations on the natural gasoline were made at both the start and finish of the test, extreme care was exercised in the taking of these samples; enough gasoline being transferred from the tank into steel bombs under the prevailing tank pressures; bombs were then placed in an iced bath and brought to a temperature of 33° Fahr., gasoline samples were then taken and the results were as follows:

Characteristics of Gasoline

BEFORE TEST	GRAVITY° A.P.I. Vapor Pressure (B of E) Corrected	AFTER TEST
87.4		86
12 lbs.	70°F.	11 lbs.
21 lbs.	100°F.	20 lbs.
46	I.B.P.	48
66	5%	68
75	10%	77
91	20%	92
110	30%	112
132	40%	134
162	50%	166
199	60%	204
229	70%	232
330	End Point	336
77	% Recovery	79.5
22.3	% Loss	19.7

Through the cooperation of the Carbide & Carbon Chemicals Corp., samples of vapor and gasoline were taken at both the start and finish of the experiment and submitted to them for fractional analysis. The samples were collected from the tanks, under the prevailing tank pressure, and delivered to the Carbide Company in steel bombs. From the analysis of the vapor at the start and finish of the test, the average analysis of the gas evolved was calculated as follows:

Fractional Analysis of Vapors from Storage Tank at Start of Run July 30, 1927

Tank Pressure 27.5 pounds

	Per cent by Volume
Air	0.0
Methane Nitrogen	8.1
Ethane	13.9
Carbon Dioxide	1.0
Propane	29.4
Butane	41.7
Pentane, etc.	5.9
Total	100.0

Fractional Analysis of Vapors from Storage Tank at Completion of Run July 31, 1927

Tank Pressure 12 pounds

	Per cent by Volume
Air	0.0
Methane Nitrogen	1.2
Ethane	10.5
Carbon Dioxide	0.3

Propane	34.9
Butane	46.5
Pentane, etc.	6.6
Total	100.0

Average Analysis of Vapors Evaporated

	Per cent by Volume
Air	0.00
Methane Nitrogen	4.65
Ethane	12.20
Carbon Dioxide	.65
Propane	32.15
Butane	44.10
Pentane, etc.	6.25
Total	100.00

Fractional Analysis of Natural Gasoline from Tank at Start of Run, July 30, 1927

Tank Pressure 27.5 pounds

	Per cent by Weight	Per cent by Volume-Liquid state	Per cent by Volume-Gaseous state
Ethane	0.6	0.9	1.4%
Propane	5.8	6.9	9.5%
Butane	27.0	28.9	33.4
Pentane, etc.	66.6	63.3	55.7
Total	100.0	100.0	100.0
Gravity of gasoline	87.4		
Gravity of pentane, etc. fraction	74.2		

Fractional Analysis of Natural Gasoline from Tank at Completion of Run, July 31, 1927

Tank Pressure 12 pounds

Ethane	0.3	0.4	0.7
Propane	4.9	5.9	8.2
Butane	24.7	26.6	31.2
Pentane, etc.	70.1	67.1	59.9
Total	100.0	100.0	100.0
Gravity of Gasoline	86.0		
Gravity of Pentane, etc., fraction	73.5		

Note: per cent by volumes in gaseous state are calculated on the assumption that the pentane and heavier constituents have the average characteristics of hexane and a molecular weight of 86. This is a reasonable and safe assumption.

Taking the average calculated analysis and using the normal cubic feet per gallon of each component, a calculated figure of 38.115 cubic feet per gallon is obtained as a check upon the experimental results of 37.6 cubic feet. This figure was derived in the following manner:

	Average Composition of Vapors from Tank Per-cent Volume		*Volume of Vapor per gallon of pure substance 60° F 30" Hg.		Cu. Ft. of gas per Gallon
CH_4 Methane	4.65	x	82.13	=	3.819
C_2H_6 Ethane	12.20	x	47.04	=	5.759
CO_2 Carbon Dioxide	.65				
C_3H_8 Propane	32.15	x	38.46	=	12.384
C_4H_{10} Butane	44.10	x	32.73	=	14.434
C_5H_{12} Pentane, etc.	6.25	x	27.83	=	1.739
					38.115

*From Day's Handbook.

As a further check upon the actual results obtained, a closer study of the fractional analysis of both the gasoline and the vapor reveals that the figures obtained can be verified in several ways. By converting the figures shown in the average analysis of vapors evaporated to gallons of gasoline lost, a figure of 350.9 is obtained against the actual figure by gauging of 350 gallons. This is computed in the following manner:

Average Analysis of Vapors Evaporated 60° F—760 MM.

	% VOLUME		Cubic Feet of Gas Based on Actual Meter Reading 60° F 760 MM. Total Gas Measured		Volume of Fraction		Volume of Vapor per Gal. of Normal Substance		GALS.
Methane	4.65	x	13,142	=	611.0	÷	.....	=	.....
Ethane	12.20	x	13,142	=	1603.3	÷	47.04	=	34.1
Carbon Dioxide	.65	x	13,142	=	85.3		.....		.....
Propane	32.15	x	13,142	=	4225.1	÷	38.46	=	109.9
Butane	44.10	x	13,142	=	5795.6	÷	32.73	=	177.1
Pentane	6.25	x	13,142	=	821.7	÷	27.83	=	29.8
	100.00%				13,142.0 cu ft.				350.9

Now, by converting the liquid contents of the tank as shown in the Carbide company's analysis both before and after the tests to the gaseous state, a check upon the meter reading may be obtained and might also prove to be of interest.

The number of cubic feet as shown above was calculated by converting the various compounds from the per cent weight to the per cent by volume in the gaseous state. An indication would be the case of ethane before the test.

Ethane = 0.6% wt. X 44,761.6# the total wt. of the contents of the tank = 286.6# Ethane.

268.6# X 359 cu. ft. per lb. mol. ÷ 30 molecular wt. Ethane = 3214.2 cu. ft.of Ethane at 0°—760 MM

3214.2 X 288.5 ÷ 273 = 3396.7 cu. ft of Ethane at 60° F. 760 MM.

By using this number of cubic feet and applying it to the average calculated composition of the gas in the manner shown previously, a figure of the following nature is obtained.

With the experimental data showing a loss of 350 gallons of gasoline containing 37.6 cubic feet per gallon and the calculated results from the fractional analysis showing 354.2 gallons containing 37.5 cubic feet per gallon, the value of these fractionations is readily apparent. These figures are also based on normal compounds and while we have no assurance that they are normal, the results show in this connection that they are quite reliable. As stated at the start of this paper, this experiment was made with a definite object in mind and not to cover the entire subject. It would have been very interesting if time had been available to carry out this evaporation to a point where additional valuable information might be secured. However, it does conclusively prove the value of the fractional analysis and also the characteristics of the gasoline evaporated in this specific manner.

It is to be noted that only 4.2% of the gasoline was evaporated and that the fractional analysis of the vapors evolved, show they consist chiefly of Propane and Butane. The figure of 37.6 cubic feet of vapor obtained from the evaporation of one gallon of gasoline therefore, is applicable only to that proportion of the gasoline evaporated.

Another point worthy of notice is that during the evaporation or weathering of the gasoline contained in the tank, appreciable percentages of the desirable components of the natural gasoline were lost.

Results from Fractional Analysis of Natural Gasoline—Cubic Feet of Gas at 60° and 760 MM.

Before Test	After Test
8'20 gals. = 236,360 cu ft.	7970 gals. = 223,058.7 cu. ft.
Cu. ft. per gal. = 28.4	Cu. ft. per gal. = 27.99

Loss from calculations 13,281.3 cu. ft.

Average Analysis of Vapors Evaporated

% Volume			Cu. ft. Calculated 13,281.3 cu. ft.		Gals. at 60°F.-760MM
Methane	4.65	=	617.6		.....
Ethane	12.20	=	1620.3		34.4
Carbon Dioxide	.65	=	86.4	=	.....
Propane	32.15	=	4269.9	=	111.0
Butane	44.10	=	5857.0	=	178.9
Pentane	6.25	=	830.1	=	29.9
	100.0		13.281.3		354.2

Data Taken During Actual Evaporation from the Storage Tank

Time P. M.	Tank Ft.	Gauge In.	Gals. as Read	Temp. of Gaso.	Press. on Tank	Corr. Gals.	Loss Gals.	Gas Meter	Cu. ft. as Passed between Read.	Temp. of Gas.	Total Corr. Volume Gas in Cu. Ft.	Cu. ft. Gal. Gas. Evaporated
2:30	6	10¾	8427	75.5	27.5	8320	0	16252	0	102°	0	0
3:00	6	10⅛	8422	75.5	24.2	8315	5	16400	148	99°	137	27.4
4:00	6	10⅜	8396	75.5	21.6	8290	30	17630	1230	91°	1289	43.0
5:00	6	9⅞	8355	75.5	20.5	8245	75	18970	1340	83°	2463	35.2
6:00	6	9⅝	8333	75.0	19.5	8230	90	19950	980	76°	3407	37.8
			(No Readings 7:00 P.M. to 8:00 A.M.) Average Temperature during this Period = 58° F.									
A.M.												
8:00	6	6⅞	8089	68.0	13.0	8033	287	28000	8050	57°	11472	39.8
9:00	6	6¾	8077	68.0	12.5	8016	304	28299	299	64°	11771	38.7
10:00	6	6½	8054	68.0	12.5	7997	323	28794	495	76°	12258	37.9
11:00	6	6¾	8031	67.0	12.0	7987	333	29300	506	86°	12745	38.3
12:00	6	6½	8019	67.0	12.0	7970	350	29760	460	92°	13180	37.7

Mexican Ambassador Wins Approval

By Special Correspondent

WASHINGTON, Oct. 1.—Belief that the Mexican questions, chief of which is the oil land question, can be settled, has come to President Coolidge, Secretary Kellogg and other leaders in the administration by the country's reaction to the appointment of Dwight W. Morrow, of J. P. Morgan & Co. to be ambassador.

Instead of a growl of malice and suspicion, the appointment, with exceptions, has caused an approving smile. The spectacle of Andrew W. Mellon, third or fourth richest man in the country, administering the treasury so as rapidly to reduce the enormous war debt, apparently has appealed to the good sense of the people.

At first there were two thoughts as to the reaction. First it was looked upon as sure evidence that President Coolidge did not have a string attached to his declination to be a candidate. The second thought was that the president was determined to throw down the gauntlet to the so-called progressive element in his own party and invite it to start something by opposing confirmation of Morrow.

The thought now is that the Mexican leaders will realize that Morrow has the backing of a large percentage of the people of the United States; also that the campaign made against American policies in Latin America had failed. That means, and it is believed the Mexican leaders will sense the fact, that in contending that their course in respect to oil lands is not confiscatory, they are going counter to the belief of Americans who will back their officials to the limit in the demand that the Mexican constitution and laws be not given retroactive application in relation to property held by Americans, regardless of what they do to their fellow Mexicans.

An element of strength for Morrow, it is believed, is his clear connection with what is known as Wall street. Mexican leaders know very well that unless they can borrow money in Wall street or get money to come to Mexico from the United States their own treasury receipts will continue to be meager. They have already felt the pinch of stringency by the low ebb to which oil tax receipts have fallen.

Everett Carpenter has opened Bartlesville office for consulting geological work after resigning from the Mississippi Valley Oil Co. As chief geologist of the Empire Gas & Fuel Co., from 1913-1919, he was credited with discovery of the Augusta and El Dorado, Kansas, oil fields, among others.

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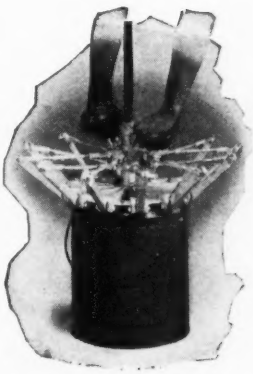

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New Pump Regulations Please Ohio Jobbers at Fall Meeting

By V. B. Guthrie
MANAGING EDITOR

DAYTON, O., Oct. 3

THAT the former intolerable state regulations governing the installation and operation of gasoline pumps in Ohio have finally been amended until they are believed fair to the oil companies and the public alike, was good news announced to nearly 400 oil marketers and equipment men who attended the fall meeting of the Ohio Petroleum Marketers Association here Sept. 22 and 23.

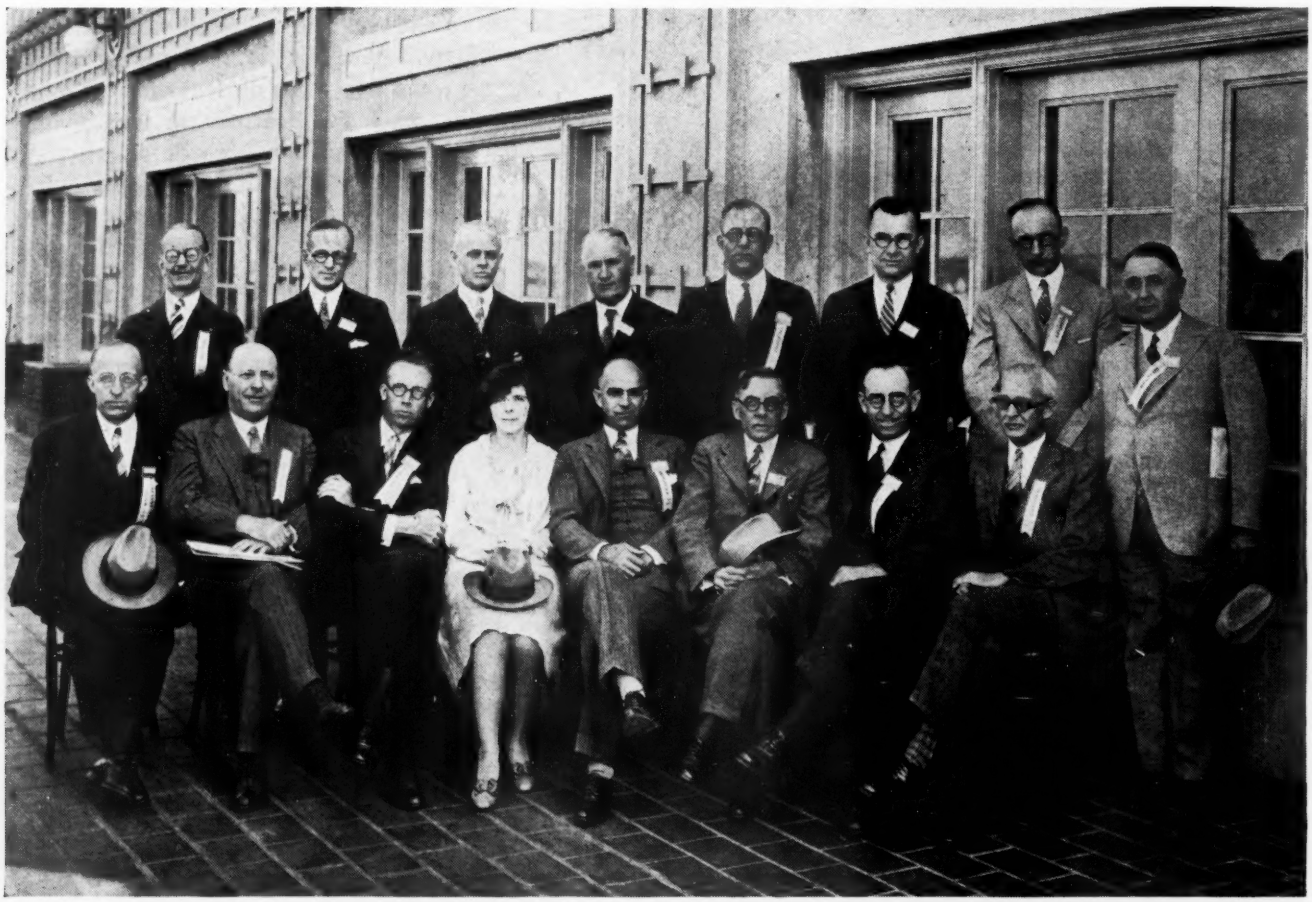
Letters with a new circular of instructions to local sealers will be sent from the state sealer's office before the end of September which will provide that pumps be approved by type. If the state office approves any type pump of any manufacturer local sealers will be required to approve that same type when installed in their territories. The old rules attempted to prescribe many points that pumps must meet in general. Local sealers, in their interpretations of what these points meant, brought much confusion. One pump manufacturer refused to sell pumps in the state under these old regulations.

Another point settled in the new instructions to local sealers in favor of the oil companies provides that pumps once installed and approved are not to be ruled out later as unsatisfactory if they measure accurately. Formerly the regulations were changed so that equipment once put in might later be ordered out as not satisfactory.

The following paragraph from the circular of instructions to be issued soon shows the change in the attitude of state officials toward the whole matter:

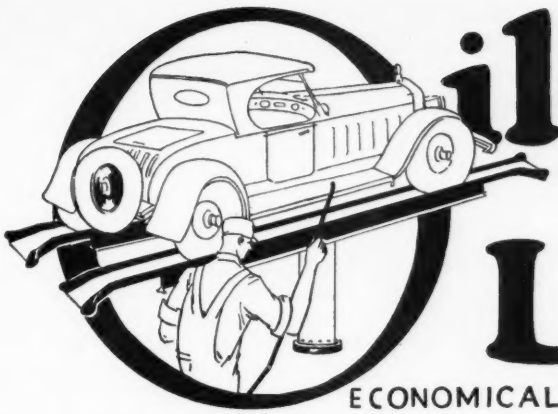
"Do not hastily condemn, or put out of use, until the specified or sufficient time for enforcement has expired, a device already in operation which measures accurately. Whether confiscation of a device by applying specifications retroactively is justified will depend upon conditions—for example, whether it be a new device or an old one reinstalled, or whether it can

Leaders at Convention of Ohio Petroleum Marketers Association



Sitting, left to right—R. W. Palmer, Accurate Measure Oil Co., Columbus, O. P. M. A. treasurer; W. A. Milne, executive secretary; J. L. Marsh, Valley Oil Co., Youngstown, first vice-president; Mrs. Alice Smith, secretary to Mr. Milne; William F. Burke, Kentucky Independent Oil Co., Covington and Cincinnati, president; John McMillan, Portsmouth Oil Co., Portsmouth; Charles Frech, White Star Oil Co., Eaton, director and Walter Bell, Gerkins Oil Co., Dayton, president of Miami Valley Petroleum club

Standing, left to right—W. P. MacDonald, service department, O. P. M. A.; Hubert B. Fuller, Chamberlin, Marty & Fuller, Cleveland, counsel for O. P. M. A.; F. M. Morrison, Accurate Measure Oil Co., Columbus; O. U. Latto, Latto Oil Co., Uhrichsville; R. C. Heil, Commercial Oil Co., Cleveland, director; William Lyden, Lyden Oil Co., Youngstown; R. K. Shoolroy, Arrow Oil Co., Wooster, director, and S. O. Rothfuss, Empire Oil Co., Toledo, director



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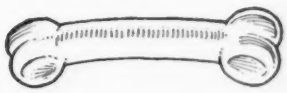
—*first and final costs have been cut to the* 

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easily divert liquid to storage, or in some other matter is used fraudently."

The wording of the circular on the point "Approval of Liquid Measuring Devices" is: "All pumps installed subsequent to Jan. 1, 1927, must meet the specifications applicable thereto and must be submitted to the state sealer for approval of type, construction and equipment as described by the manufacturer. The state sealer will advise local sealers of all pumps which comply with the specifications and the local sealers shall then seal the pumps when their type and construction are verified and their installation and delivery are correct."

Pumps installed prior to Jan. 1, 1927, are to be considered as old installations, according to the new circular, and will be considered as satisfactory when equipped, before Jan. 1, 1928, to comply with requirements listed in the circular.

OLD pumps may be removed from one location in the state to another if they conform to the rules and regulations covering old equipment.

"Before being sealed at points of installation the local sealer should be furnished with a letter from the sealer at point of prior installation certifying that the pump in question was there sealed and operated," reads the circular. "When it is not practical to equip pumps at the place of installation to meet all these regulations, they must be made as safe as possible and sealers may permit their use by a tentative agreement."

The victory for the Ohio Petroleum Marketers Association in the gasoline pump question was placed before the directors by R. C. Heil, Commercial Oil Co., Cleveland, chairman of a special pump committee, which with Secretary W. A. Milne of the association, has done a great deal of work the past year or so in the matter. Mr. Heil and Hubert B. Fuller, of Chamberlin, Marty & Fuller, attorneys, Cleveland, who was retained by the state association in this matter, explained the new regulations.

That the Ohio association establish a traffic bureau to save the members from overcharges on their freight bills was proposed to the membership for their consideration by J. L. Marsh, Vahey Oil Co., Youngstown, chairman of a committee which considered this project. Mr. Marsh pointed out that a traffic bureau representing Ohio oil companies generally could work effectively towards the end of securing adjustments in present rates from the Mid-Continent into Ohio.

Dr. Gustav Egloff, Universal Oil Products Co., Chicago, said dyes for coloring gasoline in many shades are now available to oil marketers over the country. He spoke on

"Gasoline and Its Properties." He said his company had worked out suitable coloring material at the request of marketers. He had samples of several blue and purple shades.

Dr. Egloff spoke along the same lines as he has addressed other meetings of oil marketers, urging that the present allowable sulfur content in gasoline be raised above the present .1 of one per cent. He said that volatility and anti-knock properties were the most important requirements in a satisfactory gasoline at present.

Possibilities for the Independent marketer in lubrication stations were pointed out by Frank W. Lovejoy, sales manager of the Vacuum Oil Co., New York, whose topic was "The Filling Station as a Successful Retailer." He urged the jobbers to consider better merchandising methods as the most sound means at their disposal to build their business in the face of present competitive conditions. A part of this better merchandising would be pushing products and items on which they could make a profit, he said, rather than putting so much effort on getting gasoline business. He decried the building of stations on country roads, saying the companies should go after the larger proportion of regular business they could develop in the towns and cities.

JOSEPH B. MUDD of the Marland Refining Co.'s Chicago office, spoke on "The Relation of the Refiner to the Jobber." He condemned the practice of some jobbers in sending collect telegrams and making reverse charge telephone calls to refiners when the jobbers are seeking information to use in competitive buying.

James A. Gilmore, secretary, American Oil Men's Association, spoke briefly on organization methods.

James A. Edwards, lubrication engineer, in the Chicago office of the Marland Refining Co., spoke on "Manufacturers of Petroleum Products." Warren C. Platt, editor, National Petroleum News, spoke on "The Oil Man's Opportunity."

W. F. Burke, Kentucky Independent Oil Co., Covington, Ky., president of the Ohio association, opened the convention. The oil men were guests of the Miami Valley Petroleum Club, which gave an entertainment and dance the evening of Sept. 22. Walter H. Bell, Gerkins Oil Co., Dayton, president of the Miami Valley club, was master of ceremonies. He was assisted by C. L. Ault, Arcanum Motor Co., vice-president, and Paul C. Conder, Indian Refining Co., Dayton, secretary-treasurer.

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The Editors' Viewpoint

National Petroleum News

What It Costs to be Unionized?

By Warren C. Platt, Editor

IF THE American Federation of Labor should succeed in its proposed effort to unionize the gasoline service station employes, here is what may occur.

The restrictive rules of other unions would undoubtedly be introduced into this new oil union and they would probably apply as follows:

The union would name its own foreman at a station who would tell the other employes to "go slow" and "don't rush with the trade," and "take your time, don't fill too many cars" and so on.

This policy would be planned to force more filling stations into existence in order to provide more jobs and more members for the union.

The "rules" probably would forbid attendants doing any work except filling cars. That would mean that a union carpenter would have to come out to drive a nail, a union painter to touch up a spot on a pump, a union gardner to pull out a few weeds and water the grass, a union window washer to wash the two or three windows, a union plumber to fix the rest room faucets and perhaps a union street sweeper to sweep the drive way.

Unions are most ingenious at figuring out more jobs. If any one doubts this ask any railroad operating official and he will tell you scores of instances that will make the following idea appear as most sensible. If the unions got strong enough to put the "closed shop" into effect in the oil business they probably—in the light of their actions in other lines—would demand that a special boy be on the job to pour water into the customers' radiators and probably another to help put air in the tires and perhaps even another to pour oil into the engine. This sounds ridiculous, but it is the acme of sanity compared to what unions have required in other lines, particularly the railroads, which are run by what are commonly called the sanest, most intelligent and most conservative unions in the world.

That all this might cost more money and might run the station continually at a loss is no concern of the union. That would be the oil industry's trouble. The union might even add insult to injury by starting propaganda with the public that the price of gasoline is too high anyway.

If you think this is farcical read the following editorial from the Boston Herald, run as part of a series resulting from an investigation of labor conditions there:

But It's All "Under the Rules"

(Reprinted from the Boston Herald)

Always have a Ford car chauffeur at hand when you undertake the erection of any sizeable building. As a handy man who can keep a "tin Lizzie" running he will probably save you a lot of time and money by tinkering your building machinery after hours so that, when "skilled" union men come on the job in the morning, they will not be embarrassed by their inability to keep their tools in order. For instance:

In this city on a large construction job nine engineers and one master mechanic were employed. They had to operate nine engines, some electric, some gasoline and others steam. The gas engines got out of order pretty often. Sometimes one would stop at mid-forenoon, and another at mid-afternoon, but when one once quit it seldom resumed the same day. This because, under the rules, a union man only could fix the engine and very seldom did any union man have the knowledge or skill to do the fixing. Classed as "skilled" men, paid as skilled men, and called engineers, the men on that job—and in other cases too, for this is not an isolated instance—once an engine struck on their hands could do nothing but dissemble or bluff the balance of the day. They might declare the machine worn out and say it must go to the shop, but the obvious fact was that they were ignorant of the principles on which their engines operated and did not know how to remedy simple troubles. But by the rules the union man must stay with his engine. Importing help would do no good.

Well, on any job of magnitude the builder will have a small car, often a Ford, in service day after day as the "job car" for running errands and saving time. The chauffer will receive about $25 a week. In this case the chauffeur liked to tinker. He knew when it was necessary to take a machine apart and when a rap with a wrench would solve all problems. So he would stroll over any evening a gas engine was "off", look it over, and in 15 minutes have it running again. He did it partly because of his liking for machinery and partly in the interest of the job. Next day the union engineers would find all in order, and, rather than raise any objections that might tend to the exposure of their own incompetency, would go to work without remark.

Further to illustrate the union tendency to claim all the work in sight, whether competent for it or not—

A Boston hospital must transfer its X-ray outfit from one building to another. A specialist for 20 years devoted to such work had originally installed the apparatus and was engaged to dismantle it and set it up in the new plant. He started to work on a Saturday noon and planned to have the job finished the following Monday morning. But he counted without the union. It happened that a lot of union electricians were wiring the new building. At once they demanded that the non-union expert stop work; they refused to go on until he had left the building. The understanding was they would be all done by Tuesday noon when the specialist might come back. But their work strung out. They did not finish for ten days. Then the specialist could not be had for the X-ray installation and the union men took on the task.

Not one of them knew anything about that kind of work. Every little while they had to seek help from the operator, a woman nurse. She had to explain the assembling of the machine. Repeatedly work done wrong

IF WE EXPECT OUR CHILD TO GROW, WE'LL HAVE TO CALL A HALT ON THE KNICK-KNACKS AND LIMIT THE FOOD TO ONE OR TWO STAPLE ARTICLES
OIL INDUSTRY
SEE WHAT AUNTIE HAS
SPECIFICATION
THE DISTILLATE BUSINESS
YOO-HOO- LOOKE HERE!
SPECIFICATION
SPECIFICATION
SEE WHAT UNCLE'S GOT
THE BURNER PEOPLE
SPECIFICATION
SEDGWICK

THE LITTLE CHILD AND THE WELL-MEANING RELATIVES

had to be undone and then done right. At last, they sought the aid of the X-ray expert himself. They had refused to work in the same building with this non-union man and now they asked him to save the job the union had botched. Nearly three weeks of extra time had been lost, much useless labor had been paid for, and patients needing X-ray attention had been sent to other institutions.

That rule about one man to one machine produces some interesting situations. Here are some things that happened not far from Boston.

For operating a steam derrick engine the job properly required a hoisting engineer. For operating an electrically driven concrete mixer no skilled engineer really was required, but under the rules one had, nevertheless, to be employed. Two other machines had to be installed on the job—an electrically operated cable drum to haul "charging cars", and a small, electrically driven air compressor to furnish air for the riveting hammers. Now it happened that at the time the union could not supply two engineers for the drum and the compressor. So the union arranged to have the two men already on the job do the "additional work." The compressor ran almost continuously and the union decreed that the wages a man in charge of it would have received should be divided between those two engineers. The cable drum ran occasionally, and the union arranged that any day it was operated one of the two engineers should be credited with two hours additional pay.

It is a fact that neither of the two engineers rendered any service in connection with either the compressor or the drum, yet each man received an extra half-day's pay on account of one machine and one man received an additional quarter-day's pay every day the other machine worked. That is, both men always got 12 hours' pay for eight hours' work and one man often got 14 hours' pay for eight hours' work.

A hoisting engineer gets a full day's pay for operating his engine. If a steam pump or pulsometer or concrete mixer is attached to that engine he must have an additional $2, or the amount of two hours' pay under the scale. Actually he may do nothing but turn a valve or throw a switch twice or four times a day. Moreover the machine may not even run. Just so long as the connection continues between the engine and the attached apparatus the $2 extra per day must be paid.

If the engineer spends a half hour in the morning firing his engine he gets an extra hour's pay. Sometimes the night watchman does the firing. But to do it he must be a "licensed" man. The rule reads: "On jobs where there is no licensed watchman, engineer shall get up steam and shall receive one hour's pay for the same."

By the rules you may shift a derrick crew from one crane to another. But an engineer sticks by the engine with which he starts. On a big job you have a motor and derrick at each end of your building. The trucks will deliver materials to the derrick nearest where they will be required. On any day when only one motor is running if a truck arrives with a load that goes to the opposite end of the structure you cannot shift your engineer. He may have nothing whatever to do, but you must send for another union man to operate the idle engine or you must have your goods hoisted to a place distant from their point of application and later handle them all over again.

These rules are supposed to operate to the advantage of the men who work under them. They do not. Not only do they penalize owners and the entire public unjustly, but they damage the whole labor cause by demanding more and more pay not for more and better work, but for less and poorer work. The only way labor can permanently help itself is by doing, each and every man, the best work and the most work of which he is capable, expecting to receive, as he would abundantly deserve, handsome pay therefor.

Visiting Around the Refineries

By Paul Truesdell

National Petroleum News

Safe Refinery Boiler Operation

THE gospel of safe handling of boilers, written by L. L. Baker, superintendent of power at the Barnsdall refinery, and published in Barnsdall, seems so good to us that we are passing it along just as he wrote it:

"The first act of the engineer on entering his watch is to ascertain the exact height of the water in his boiler. Do not rely on glass gauges, floats or water alarms, but try the gauge cocks. No engineer should be satisfied with a general squint at the gauge glasses but should satisfy himself that the water is normal, for insurance companies tell us that defective gauge glasses and cocks and stopped up water columns are the cause of more boiler failures than all other causes combined.

"Low Water—In case of low water immediaetly get fire from boiler and under no circumstances try to put water in same, lift safety valve or start up any load on it until it has been cooled down to zero pressure and its condition ascertained.

"Feed Pump or Injector—These should be kept in perfect order and of ample size. No make of pump can be expected to be reliable without regular and careful attention. It is much safer to have two means of feeding boilers. Check valves should be frequently cleaned so that they will function when pump or injector is not working.

"Fusible plugs must be examined when the boilers are cleaned and carefully scraped clean on both the water and the fire sides, or they are liable not to act in case water goes off crown sheet.

"All heating surfaces should be kept clean outside and in or there will be serious waste of fuel. The frequency of cleaning will depend upon the nature of the fuel and water but good practice demands a weekly cleaning in most cases.

"Safety Valves—Great care should be exercised to see that these valves are ample in size and in working order. They should be tried at least once every day to ascertain their true condition.

"Steam Pressure Gauge—This gauge should be tested once a month against a standard gauge and under no circumstances should an inferior gauge be used for this purpose.

"Never pump cold water into a hot boiler. Many times leaks and explosions are caused from this practice.

"If water is muddy or salty blow off a portion frequently, according to condition of water. This is sometimes necessary six or eight times a day.

" 'Cutting In' Boilers—To cut in a boiler or put it on the line after it has been out of service is to place it in free communication with other boilers that are under steam. In cutting in a boiler that has been idle, the stop valve should be kept closed until the steam pressure in the boiler has risen to the exact value prevailing at the time in the steam header to which the boiler is to be connected. It is not correct to bring the pressure to within a few pounds of that in the main.

"Practice of this kind should not be used for it is very important that the pressure should be exactly the same as nearly as possible. When gauges indicate the same the boiler stop valve should be opened very slowly, by a mere crack at first because it will be impossible by means of commercial steam gauges to get the pressures exactly the same, so there will be no flow in either direction, but when the valve is opened very slowly it permits the small outstanding difference of pressure to become equalized gradually.

"If there is any evidence of disturbance in the boiler or piping, as indicated by snapping or pounding, or by abnormal vibration of the boiler, the stop valve should be immediately closed. If there must be a difference of pressure it is safer to have the pressure in the boiler to be cut-in a little higher than pressure in main, rather than lower, because steam will then flow from the boiler out into the main instead of the opposite direction. However, it is much better to have as near equal as possible to do so with commercial gauges."

What the Flyers Require

PERHAPS there has been a good deal of speculation as to what kind of gasoline the airplane is going to require when it gets into operation by thousands for commercial purposes. Union Oil Bulletin September issue, reproduces a tag attached to all Wright airplane motors. The tag bears the heading, "Warning" and gives these instructions as to the type of fuel to be used:

"This engine is designed to use only high test aviation gasoline as fuel. The use of other fuels is apt to lead to unsatisfactory operation and serious damage to the engine. The manufacturer will assume no responsibility for the engine's performance when other fuels are used.

"In the event high test aviation gasoline is not available always operate at reduced throttle with the mixture control in the full rich position. Use benzol gas, ethyl gas or high test automobile gasoline if available. Gasoline from California base crudes is much superior to gas from Mid-Continent or eastern crudes."

Amalgamates Canadian Branch

THE Tidioute Refining Co. of Canada, Ltd., announces through A. Duddridge, office manager, that it has amalgamated with the Frontenac Oil Refineries Ltd. The headquarters of the amalgamated companies is in Montreal, Que. The Tidioute of Canada is a subsidiary of the Tidioute Refining Co. which has a refinery at Tidioute, Pa.

Shell Building West Indian Refinery

CHICAGO Bridge & Iron Works announces that it has been awarded a contract involving about 9,000 tons of tank work for the Anglo Mexican Petroleum Co., Ltd., (Royal Dutch Shell). The contract calls for the fabrication and erection of more than 50 tanks of various sizes and miscellaneous plate work figuring in the construction of a large refinery building on the island of Aruba, D. W. I.

Oil Mining a Coming Practical Method For Secondary Production

By Lester C. Uren

Professor of Petroleum Engineering, University of California

Article 2

Two Articles on Oil Mining

THIS is the second of two articles on oil mining. In the first, published in Sept. 14 issue of NATIONAL PETROLEUM NEWS, the general principles of underground drainage of petroleum through mine openings were presented by Professor Uren. The present article concludes a review of the subject of oil mining. It explains briefly the various mining methods that have been used and proposed, and presents an estimate of the economic possibilities of oil production by this means. Professor Uren, in his next series, will review the recent literature on oil well pumping.

BEFORE attempting to describe the oil mining methods in greater detail, it will be helpful for the reader to consider a broad classification of them, in order that the discussion to follow may fall into proper perspective. We may conveniently discuss them under three major headings and several subdivisions or systems:

1. Actual mining of the oil sand and removal of it to the surface for treatment by washing or retorting.
2. Drainage of oil from the reservoir sand, without actual mining of it, through mine shafts and galleries driven directly into and through the oil sands.
3. Drainage of oil from the reservoir sand, without actual mining of it, through mine openings driven primarily outside of the oil sand, but communicating therewith by secondary, controlled openings:

(a) The Ranney System, in which bore holes are drilled to penetrate the oil sand from mine drifts driven below or above the oil sand, with provision for controlling the flow of oil and gas therefrom.

(b) The Rich System, in which slots are cut to penetrate the oil sand from mine openings driven below or above the oil sand.

(c) A system of drainage which involves drilling a series of radiating bore holes, more or less horizontally into and through the oil sand from a shaft penetrating the sand. The principal feature of and results secured with each of these methods and systems of oil mining, are presented below.

Actual Mining of the Oil-Bearing Sand and Removal of It to the Surface for Extraction of the Oil

MINING of oil sands, followed by removal to the surface and subsequent treatment for the extraction of oil, was practiced in the Pechelbronn oil field, Alsace, France,[2] as early as 1735, and in southern France, near Gabian,[3] the method was also used during the early part of the seventeenth century. The early French methods involved sinking shafts to penetrate sands only 100 or 200 feet below the surface, containing a heavy, viscous petroleum, excavating the sand in short galleries driven from the shafts, hoisting it to the surface and washing with boiling water to release the oil.

By this means a product low in volatile fractions but rich in waxy residues was secured. After the galleries had been carried to the limits afforded by natural ventilation from the shaft, the pillars were "robbed" and the openings filled with waste. Water encountered in the oil sands frequently compelled abandonment of the workings during this period. Ex-

2. Rice, G. S., and Davis, J. A., "Mining Petroleum in France and Germany," Trans. A. I. M. & M. E., 1925. See pp. 278-314 of "Petroleum Technology and Development in 1925," a book published by the Institute, May, 1925.
3. De Chambrier, P., "Etude economique sur l'exploitation du petrole par drainage souterrain," Chimie et Industrie, May, 1923.

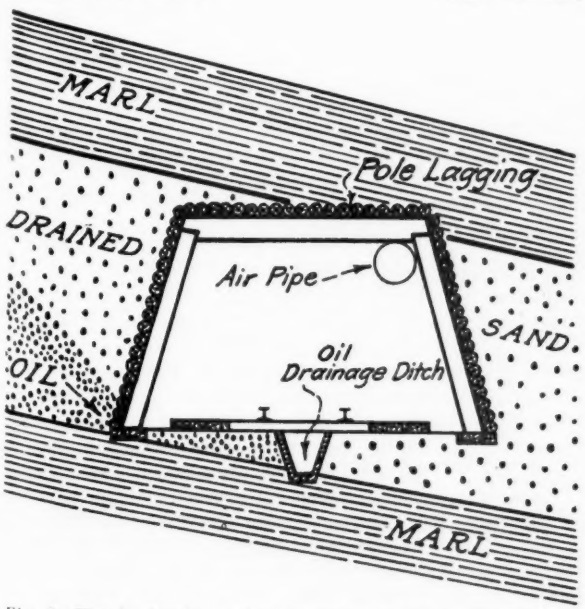

Fig. 1—Sketch showing typical cross-section of oil sand drift in the Pechelbronn Mine. (After Rice and Davis)

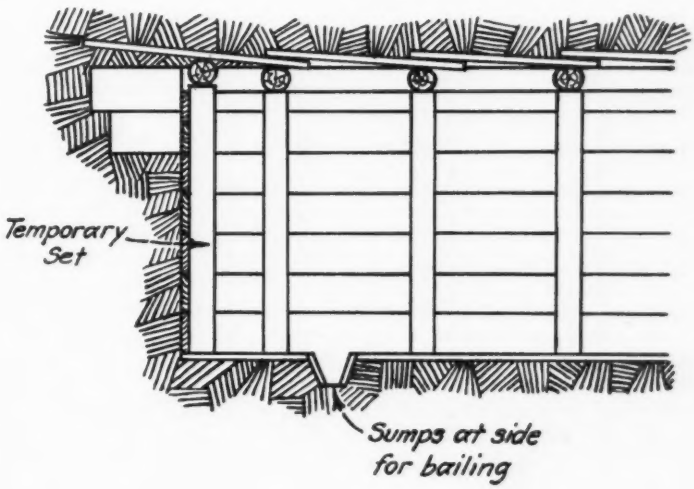

Fig. 2—Sketch illustrating method of fore-poling or spiling in driving drifts through unconsolidated oil sands. (After Rice and Davis)

cessive quantities of gas were occasionally encountered, and fires and explosions occurred.

This practice continued on a small scale in the Pechelbronn field until 1866, when, on encountering a deeper sand containing less viscous oil, it was learned that a fair recovery of the oil could be secured from the sand through the mine openings while in place, and without removing it to the surface for treatment.

Though the original method, involving complete excavation of the oil sand, is not now used, it is still spoken of by some authorities as the ultimate in oil recovery methods. There is little doubt but that a greater percentage recovery of the oil may be secured by this method than by any other—practically complete recovery of the oil from such sand as can be brought to the surface, is possible—but it is improbable that actual mining of the sands will be attempted except as a last resort, because of the physical difficulties and hazards presented. Other methods, involving drainage of the sands in place, though less efficient, are cheaper and can be conducted with less risk.

Subterranean Drainage of Oil Sands Through Mine Workings Driven Directly into and Through Oil Sands

DRAINAGE of oil through mine galleries driven directly through the oil-bearing sands, and without actual mining of the sands (except that involved in the excavation of the galleries), has been successfully practiced in two different European oil fields during recent years. One of these projects is the well-known Pechelbronn mine in Alsace, to which reference was made in the previous article of this series, and the other, the Wietze mine, near the city of Hanover in Germany.

The present subject in the Pechelbronn Field, Alsace, had its inception in 1916 when Germany, then in control of Alsace, experienced a shortage of oil products as a result of wartime conditions. The success attained gave encouragement to a continuance of mining operations during the postwar period. Since 1916, five shafts have been sunk to the oil sands and upwards of 20 miles of drainage drifts have been driven.

The sands exploited are encountered at a depth of from 500 to 800 feet and are individually from 6 to 10 feet thick. The sands are interbedded with marl and occasional beds of clay and shale, are more or less lenticular in form and the formation is broken into blocks by numerous small faults. Individual lenses of sand are as much as 75 feet wide and nearly 1000 feet long. The formation dips at an angle of only 5 or 6 degrees from the horizontal.

The sands vary in texture, but are for the most part, medium grained

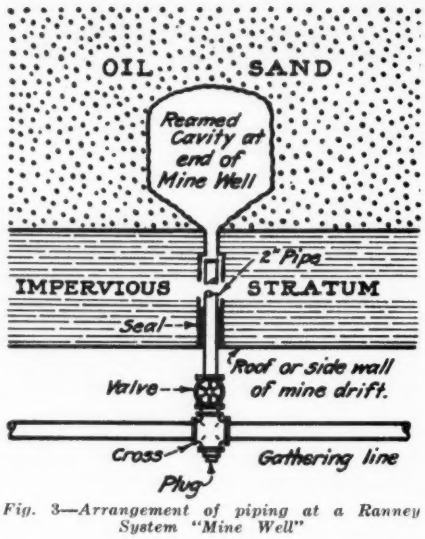

Fig. 3—Arrangement of piping at a Ranney System "Mine Well"

and compact, but not thoroughly cemented. A loose piece is easily broken by the fingers, and yet the sand is singularly tough in place.[2] Cross-bedding is occasionally in evidence and many slip planes and thin seams of bluish marl are to be found on close inspection. Pronounced cleavage planes and bedding planes within the sand lenses, however, are unusual. The sand frequently contains clay, and due to the retentive power of clay for oil, the sands which contain the most clay also carry a greater percentage of oil.

Drainage of oil in this field by means of wells, proceeded for many years before the present mining operations were begun and the oil sands have been largely drained of the hydrocarbon gases which they originally contained. Such gas as remains is retained within the pores of the sand in the form of small bubbles under relatively low pressure. The oil content of the sand (after drainage through wells, and prior to mining) is quite variable, but is said to average about 200 liters per cubic meter of sand, or 120 kilograms per metric ton[4] (240 pounds per short ton). Saturated sands that have not been appreciably influenced by well drainage, usually contain 12 or 13 per cent of oil, by weight, although the percentage may drop to as little as 5 per cent in poor ground. After drainage through mine openings, the sands still contain from 3 to 8 per cent of oil[5], and are said to average 4.8 per cent. Assuming that the sand originally contained 12 per cent of oil, De Chambrier estimates that only 16.7 per cent of the total oil content could be secured by wells, up to their economic limit of profitable operation, and that subsequent to this, mining operations are capable of securing an additional 43.3 per cent, leaving 40 per cent of the original oil in the sands.

Four wells in the vicinity of the No. 1 Perchelbronn shaft, produced a total of 147,000 barrels of oil during the period 1908 to 1917, and had about reached the lower limit of profitable operation. From March, 1917 to September, 1920, 338,800 barrels of oil were produced from this same area by drainage through underground workings, or approximately 2½ times as much as from the four wells. The greater part of the current production is secured from freshly cut sand surfaces, and the rate of production is more or less proportional to the rate of advance of the drainage tunnels.

The yield of oil per linear unit of drift driven, will depend upon the degree of saturation of the sand, but has averaged about 10.7 metric tons per meter of tunnel driven, or about 23 barrels per foot.

The mining practice in the Pechelbronn mine consists in driving drifts directly through the oil sands along the strike of the deposit from five vertical shafts, the several shafts being connected by drifts at various levels for security in time of fire or explosion, and also as an aid to ventilation. The drifts are given a slight inclination to permit of gravity drainage of the oil to the collecting sumps. At right angles to the main drifts and in the plane of the dip of the deposit, inclined "raises" are driven connecting the drifts at various levels. The main drifts are from 160 to 350 feet apart and the inclined openings connecting them are driven at 160-foot intervals. Rectangular blocks of sand, 160 feet square or more, are thus "blocked out", with mine openings for drainage on all four sides.

THE orderly system of development contemplated in the general plan, is not always followed, however. For example, if a small detached body of oil-saturated sand is known to be situated a short distance above or below an existing mine opening, a "cross-cut" or an inclined "raise" or "winze" may be driven into it and a secondary drainage drift excavated.

Exploratory drill holes are customarily driven in all directions from the working faces, not only to disclose the presence of detached bodies of oil sand, but also to vent any gas pockets which might prove troublesome if suddenly encountered at the working face. Small detached bodies of sand are occasionally drained through drill holes driven from nearby workings.

The main drifts are 6½ feet high

4. De Chambrier, P., "Working of Petroleum by Means of Shafts and Galleries", Journal, Int. of Petroleum Technologists, Vol. 7, pp. 178-205.
5. Camsell, C., and Buisson, A., "Recovery of Petroleum by Shafts and Galleries at Pechelbronn, Alsace, France, and at Wietze, Hanover, Germany", Memorandum, Series No. 10, Canadian Dept. of Mines, Mines Branch, 1924. See also, Canadian Mining Journal, Vol. 45, pp. 352-355, April 11, 1924.

and 10 feet wide, measured inside the timbering, but secondary openings are narrower. Supports in the drainage drifts are in part, closely spaced timber 6 to 8 inches square, though recent practice has tended toward steel supports as a precaution against fire, particularly in the vicinity of the shafts and working faces. The shafts are in part lined with brick, but reinforced concrete is preferred in the vicinity of the oil sand.

Because of the danger of fire and explosion, no explosives are used within the oil sand. The material is "slabbed off" at the working faces with the aid of pneumatic hammer drills. Hand picks and reciprocating drills are not employed because of their tendency to form sparks on hard nodules of pyrite which are occasionally encountered. The material broken at the working faces is trammed to the shafts in small mine cars with the aid of mules, and hoisted to the surface in shaft cages.

About 500 tons of material are thus mined daily, hoisted and dumped on the surface. About 20 barrels of oil are secured daily by natural drainage from the waste dump. Crushing and washing the waste material have been considered, but such practice is uneconomic at present.

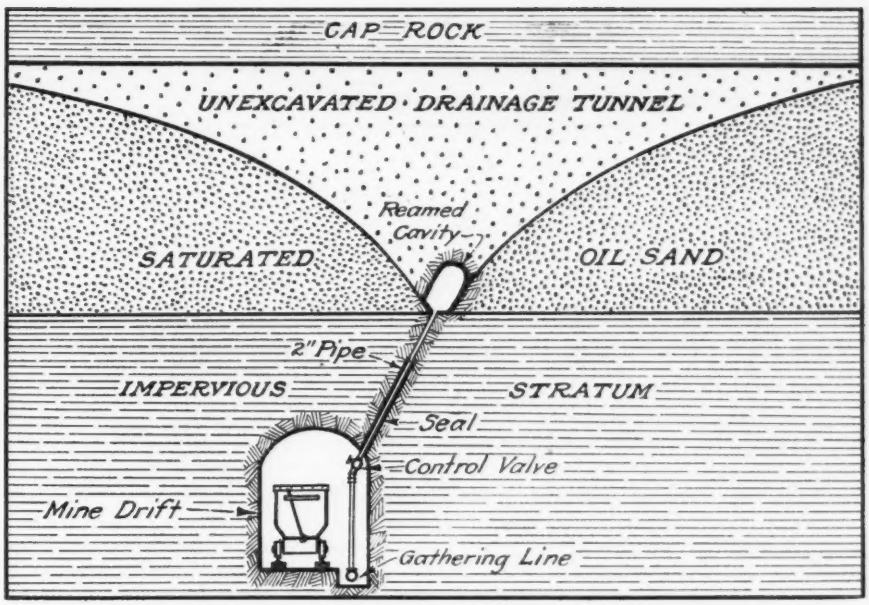

Fig. 4—Illustrating the formation of "unexcavated drainage tunnels" in connection with the Ranney System of Oil Mining

OIL drains from the freshly cut sand at the working faces for the full height of the drifts but after a short time the upper walls and roof of the drifts no longer produce, drainage being confined to the sands near and beneath the floor. A ditch is excavated along the center of the floor of the drifts to receive the flow of oil and carry it to the drainage sump. (See Figure 1) on Page 69.

This ditch is lined with plank, sheet iron or concrete, and is covered with metal plate for fire protection. Much of the drainage at points remote from the working faces, is through the walls of the ditch, so that the plank flooring in the drifts is kept more or less free of draining oil. These ditches lead the oil to a central storage sump from which a pump lifts the oil to the surface. The pumping column carries the oil to the surface through an abandoned well encountered in the mine workings.

Special attention has been given to the problems of ventilation of mine workings. Natural ventilation between two shafts controls the primary direction of air currents, one shaft being maintained as an "upcast" while the other is a "downcast". Mechanical fans and suction blowers are also employed near the working faces, and at "blind" drifts which may not be sufficiently ventilated by the natural air circulation.

The mine gases are systematically sampled and analyzed, and an effort is made to keep the percentage of hydrocarbon gases below two-tenths of one per cent. For each man employed underground, 210 cubic feet of air per minute are passed through the underground workings. While dangerous concentrations of gas are carefully guarded against, precautions are also taken against accidental ignition. Electric storage battery hand lamps are used for illumination. No electric wiring is permitted underground and open flame lamps and candles are prohibited.

Complete income and cost data on mining operations in the Pechelbronn project, from which profits might be precisely determined, have not been made public. Data gathered from various sources, however, permit of approximate estimates. Messrs. G. S. Rice and J. A. Davis[5] of the U. S. Bureau of Mines, who visited the Pechelbronn mine in 1923, offer the following estimates of the items entering into the cost of producing a barrel of oil:

Labor	$0.62
Supplies	0.53
Fixed Charges	0.38
General Expenses	0.05
Royalties	0.19
Profits, 10% on invested capital	0.29
Total cost per barrel	$2.06

Mr. P. De Chambrier[5], who has been closely identified with the management of the Pechelbronn enterprise since its inception, has offered figures which indicate that the cost may vary from $1.52 per barrel to $8.76 depending upon the saturation and yield of the oil sand exploited. Mr. De Chambrier also states that "if the sand is strongly impregnated, the beds of large dimensions, the ground has sufficient variation in level, and the oil to be extracted is of light viscosity, then the production by mining will be such that it will be easily able to compete with the cost price of oil obtained by surface 'borings' ". Mr. E. Bloesch states that the cost of producing oil in the Pechelbronn mine is no higher than the cost of oil produced by wells in the same field[6].

Mining Methods in the Wietze Oil Mine, Hanover, Germany

THE German syndicate which initiated the Pechelbronn project, has undertaken to apply the methods used in the Pechelbronn mine, in draining oil sands in the Wietze oil field near the city of Hanover, Germany. The present mining enterprise had its inception in 1917, when a shaft to intersect the oil sands, at a depth of 866 feet, was begun. This shaft was completed in 1920 and a second has been completed since that time. Drifts have been driven from these shafts into four oil sands ranging from 590 to 850 feet in depth. Their combined thickness is 160 feet.

The Wietze field is located on the flank of a salt dome, which has sharply folded the overlying sediments in which oil has accumulated. The productive formation is intersected by a series of faults and has a rather complex structure. Sands and sandstones containing a heavy, viscous oil (specific gravity, 0.939), are found at depths ranging from 300 to 650 feet, and a lighter, more volatile oil (specific gravity, 0.886), is encountered at depths of 980 to 1150 feet. Upwards of 1000 wells have

6. Bloesch, E., "Oil Mining", Bulletin, American Association of Petroleum Geologists, Vol. 19, No. 4, April 1926, p. 411.

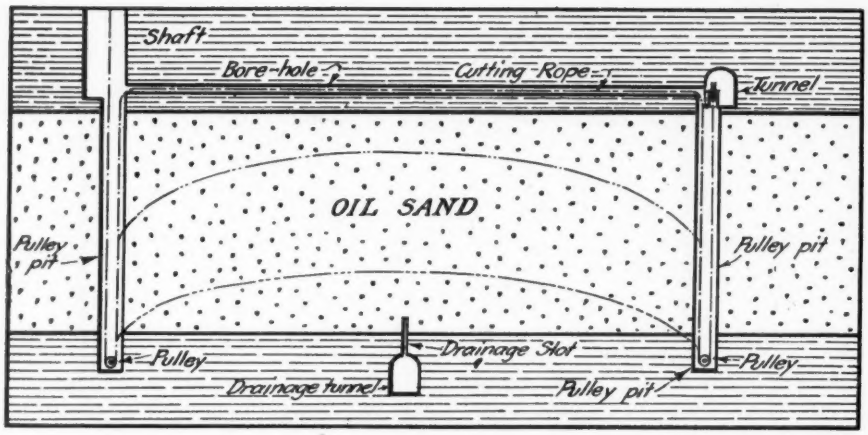

Fig. 5—Sketch illustrating method proposed by Rich for cutting drainage slots through oil sands from mine openings. Dash-dot lines represent different positions of cutting rope. Slot cut from lower drainage tunnel is in plane perpendicular to that cut from upper tunnel

been productive in the field, chiefly from the deeper sands.

The oil sands exploited in the Wietze mine are not as coherent as those being worked at Pechelbronn, and are so heavily saturated with oil in places that they resemble "quick sand". It is possible at some of the faces to force a walking stick into the sand for a foot or two[7]. Men at the working faces have to stand on planks to avoid sinking into the sand, and heavy spiling must be used with fore-poling, to support the walls and roof of the drifts. Some of the richer sands contain as much as 42 per cent of oil, by volume. The sand occurs in lenses, interstratified with clay which, when dry, is quite hard, but becomes plastic when wet. Small seams of clay extending in all directions through the sand, more or less isolate the bodies of sand which they inclose. The sands contain very little free gas, having been thoroughly gas-drained by many wells, previously productive over a considerable period of time. The oil produced by the mine contains about 7 per cent of salt water, which occurs within the oil sand under low pressure.

MINING practice in the Wietze mine is essentially the same as at Pechelbronn. The drifts and inclined connecting raises cut the sands into rectangular blocks, exposed on four sides. The mine workings are driven entirely in oil sand. The principal drifts are elliptical in cross-section and lined with brick. Less permanent entries are timbered.

In very soft headings, both roof and side spiling are used outside of the timbers and the working faces must be "bulk-headed" while fore-poling is driven ahead. (See Fig. 2) on page 69. Only one plank may be removed at a time from the bulk-head, in advancing the face. No explosives are used. Some difficult problems in shaft sinking were presented in sinking the two Wietze shafts. The upper 200 feet of the formation penetrated contains water under pressure and recourse was had to the Poetsch freezing system. Cast-iron tubbing is used in lining the shaft through this water-bearing zone, but below it, brick lining is employed.

Recovery estimates based on data secured by careful observations in the Wietze mine, indicate that 20 to 25 per cent of the original oil content of the sand was secured by exploitation through wells, and it is claimed that an additional 60 per cent is secured by mining, leaving only 15 or 20 per cent in the sand unrecovered. Authorities differ somewhat, however, on the recovery by mine drainage, von Hofer claiming that only about half of the oil left in the sands after drainage through wells, is secured by drainage through mine workings. This would accord very closely with the percentage recovery at Pechelbronn.

In 1923, the Wietze mine gave employment to 600 men and the monthly production ranged from 7000 to 8400 barrels. The project has possibly not as yet become a profitable one due to adverse circumstances and post-war economic conditions beyond the control of the management, but may be expected to become so as the scale of operations is increased, particularly if a somewhat higher selling price for oil prevails in future years.

Early Oil Drainage Tunnels in California

WHILE the process of underground drainage of oil sands through mine openings apparently originated in France in 1866, it was during this same year that the first of a series of 31 oil-drainage tunnels was driven into the oil sands of Sulphur Mountain, Ventura county, California, by the Union Oil Co. of California.[8,9] The topography in this vicinity is very rugged and the shallow oil sands are sharply flexured and steep-dipping. The tunnels, one of which attained a length as great as 1900 feet, were driven into the mountain from the surrounding canyons, at a slight inclination above the horizontal to facilitate drainage.

The oil sands were penetrated and the oil which drained from them flowed for many years into the tanks and pipe lines of the Union Oil Co. While it is questionable whether these tunnels were really profitable from the commercial standpoint, they served at least to indicate the feasibility of this method of attack.

The Sharkey Project at Newport Beach, California

IN THE vicinity of Newport Beach, Orange county, California, exploratory wells demonstrated the presence of a considerable body of sand impregnated with a heavy, viscous oil, said to have a density of only 5 or 6 degrees A. P. I.—heavier than water. It also contains considerable water and is so viscous at ordinary temperatures that it is not readily handled by oil-well pumps. Efforts were made to produce this oil through wells after heating with steam, but they were not overly successful.

In an effort to produce the oil by mining, Mr. J. Sharkey sank an inclined shaft at an angle of 45 degrees to a depth (on the incline) of 505 feet, where the sand was penetrated. A drift about 30 feet long was driven into the oil sand from the bottom of the shaft to provide a sump in which oil might accumulate. A large steam coil placed in this sump served to heat the oil and the surrounding oil sand. The heavy oil rose in the shaft on application of heat, to a depth of 12 feet, and within a short time 500 barrels were produced.[10] The rate of production quickly subsided, however, to about 5 barrels per day, and it is believed that the project is now abandoned.

The Estell County, Kentucky, Project

At Ravenna, Estill county, Kentucky, a shaft was sunk to a depth of 130 feet through black Devonian shale, to an underlying bed of oil-bearing limestone. A production of only two or three barrels of oil per day was secured through the walls of the shaft, so the project has not proven a commercial success. It is

7. Much of the descriptive matter relative to conditions in the Pechelbronn and Wietze mines, has been adapted from the paper by Rice and Davis, referred to in Footnote No. 2.

8. Matier, H. A., "The Oil Tunnels of Sulphur Mountain", Bulletin, Union Oil Company of California, Vol. 1, August 1921, pp. 5-9.

9. Orcutt, W. W., "Early Oil Development in California," Bulletin, American Association of Petroleum Geologists, Vol. 8, p. 64 (1924).

10. Crane, H., "How California's Oil Mine at Newport Beach is Solving the Problem of Recovering Heavy Oil", Petroleum World, (Los Angeles), January 1926, pp. 59, 68.

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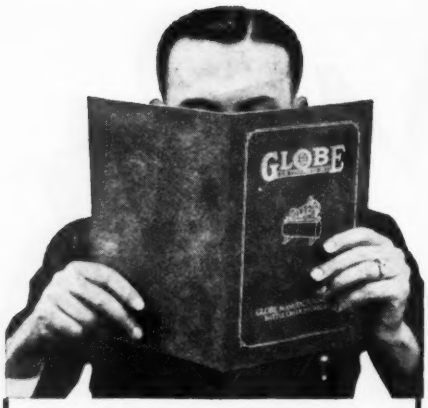

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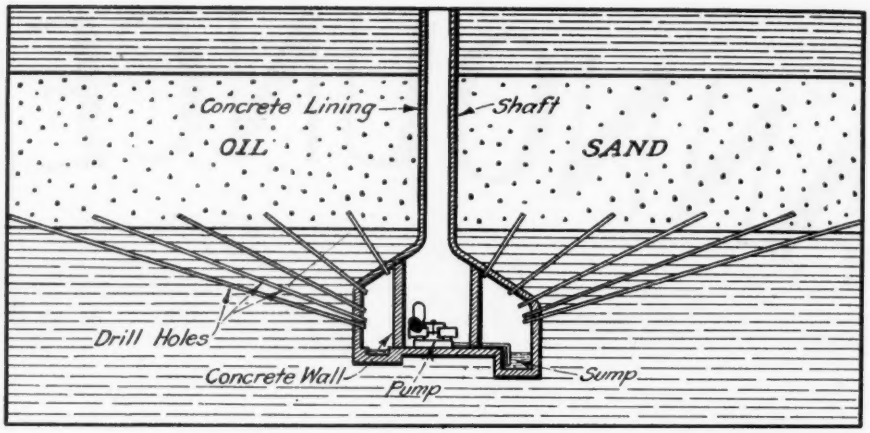

Fig. 6—Sketch illustrating the Wright System of draining oil sands by a series of radiating bore-holes drilled from a mine shaft

of interest, however, in that it is the only project known to the writer, in which an effort has been made to secure production from a limestone reservoir rock by the mining method.[11]

Subterranean Drainage of Oil from Sands Through Secondary Openings Communicating With Mine Workings Situated Outside of the Oil-Bearing Sands

AMONG the many disadvantages of the process of oil drainage practiced at the Pechelbronn and Wietze mines, in which mine workings are driven into and directly through the oil sands, is the fact that the method cannot be applied to oil sands which yield considerable quantities of gas under pressure. Though drained of high-pressure gas, it is thought by some authorities that an oil of high gasoline content would be productive of vapors that would make direct mining difficult and dangerous.

Even when the ventilation problem can be satisfactorily met, it must be admitted that the conduct of mining operations under the conditions presented in a body of sand saturated with inflammable liquid and explosive vapors, presents a hazard not pleasant to contemplate, either by the workers or the management.

With the purpose of avoiding these limitations and hazards, processes of draining petroleum through underground workings have been developed in which the mine openings are driven immediately above or below the oil-bearing formation, in rocks comparatively free of oil and gas, and in which mining operations may be conducted with but little more risk than that which attends such enterprises in the metal mining industries.

After access to the vicinity of the oil has thus been provided, numerous holes of relatively small diameter, are bored from the mine drifts into the oil sand, or narrow slots are cut, through which the oil is permitted to drain from the sand into an oil gathering system in the mine drifts. Presumably, with such a system, conditions could be maintained under which little or no gas or oil vapor would be liberated into the mine atmosphere and the principal hazards of the more primitive system used at Pechelbronn and Wietze are eliminated. Such methods also possess certain other advantages in that they facilitate the use of supplemental aids to oil recovery, such as the use of artificial gas or water pressure, vacuum or heat.

The Ranney Oil Mining System

Probably the best known of the methods employing secondary controlled openings draining to the mine drifts situated outside the oil sand, is the Ranney system. In this method, the mine drifts are driven either in the formation directly above or directly below the oil sands, from one or more shafts communicating with the surface. At short intervals along the drifts, holes are drilled into the oil sand and the gas and oil are withdrawn through pipes sealed into the bore holes.

THESE "mine wells" communicate directly with a system of pipe drains in the tunnels, leading to separating tanks or sumps from which the oil is pumped and the gas permitted to flow to the surface. A valve control on each mine well, permits of regulating the flow at the different openings to any desired degree. The pipes are sealed into the bore holes before penetrating the oil sand, and "drilling in" of the mine wells is completed by drilling through the open control valve (see Figure 3) on Page 70 so that even during the development stage, little or no free gas or oil vapor may enter the mine workings. Provision is made for reaming out a cavity within the oil sand

11. Jillson, W. R., "A New Method of Producing Crude Oil in Kentucky", Kentucky Geological Survey, Series 6, Vol. 6, 1921, p. 149.

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at each mine well, thus decreasing the drainage resistance.

Mr. Leo Ranney, who has patented this system of mining[12] suggests[13] that mine tunnels be driven around each 40-acre tract and that 3-inch mine wells (2-inch pipe) be drilled at 10-foot intervals along each tunnel. There would thus be 528 mine wells in the tunnels surrounding each 40-acre tract, and three-fourths of the oil within it will have to flow through an average distance of only 165 feet of sand in reaching a drainage outlet.

Mr. Ranney stresses the advantages which his system of mining apparently possesses, in facilitating the use of supplementary methods of increasing recovery. For example, with this method, it would be possible to apply elevated air or gas pressure to the oil sands in forcing the oil over considerable distances through the sands to the mine wells.

Vacuum may be applied to the mine wells to increase the drainage effect, or water flooding from one group of mine wells toward another may be effectively used. Steam or hot air or gas may be applied to the sands through the pipe nipples, in alternate periods of heating and drainage. Elevated ground temperatures in the vicinity of the drainage drifts, would decrease the viscosity of the oil so that it would flow with less resistance to the drainage openings.

Due to the depression of the oil level in the sand about the mine wells, the sand body above or below each drainage tunnel is soon drained of its oil, the sand being relatively free of oil. Mr. Ranney refers to these oil drained channels as "unexcavated drainage tunnels", and it is considered probable that oil would flow through the sand toward such a low-pressure channel in much the same manner as it would to the free face in an actual drainage tunnel. (See Figure 4) on Page 73. When heat is applied to the sand through the mine wells, the "unexcavated drainage tunnels" become "hot-sand drainage tunnels", from which steam or hot gas may extend to remote points in the oil sand.

A PRACTICAL demonstration of the Ranney system of oil mining was made in an experimental mine near Jacksboro, Texas. While the sand exploited contained too little oil to make this project commercially profitable, the results secured clearly demonstrated the practical feasibility and efficiency of the method. Patent rights to the process have since been assigned to the Standard Development Co., a subsidiary of the Standard Oil Co. of New Jersey, and the Ranney Oil Mining Co., of which Mr. Ranney is president, has been organized for further practical exploitation of the method.

It is estimated that installation costs for use of the Ranney process will range from 12 to 30 cents per barrel under favorable conditions. These figures provide for the most modern mining and pumping equipment with reinforced-concrete lined shafts to a depth of 800 feet. Operating costs may be as low as 5 cents per barrel.[14] The unit costs are of course, influenced to an important degree by the quantity of oil recoverable.

OTHER oil-mining systems, resembling the Ranney system to the extent that they provide for drainage of oil through holes drilled from mine tunnels situated outside the oil sand, should be mentioned in passing. The general principle of drainage by this means was patented as early as 1865 by P. Casamajor.[15] A somewhat similar method known as the Ehrat system[16] has been patented in England and France and used to a limited extent in the Pechelbronn and Wietze mines. Another, that of E. M. Carter,[17] was given a practical trial in a mining project in the Electra field in northern Texas, by the Panhandle Refining Co. under the personal direction of Mr. Carter. In this project, a shaft 106 feet deep was sunk to the stratum below a shallow oil sand and 30 feet of tunnel driven from the shaft beneath the oil sand. Holes drilled up into the oil sand drain oil to the tunnel where it is gathered in a sump in the bottom of the shaft and pumped to the surface. The results have not been made public within the writer's knowledge. These three systems differ from the Ranney system chiefly in that they do not provide for the refinement in control afforded by the latter, and do not contemplate the use of secondary aids to recovery, such as the use of controlled gas pressure, heat and vacuum.

The Rich System of Drainage Through

Somewhat greater security in mining operations than is possible in driving entries directly through the oil sand, with an equivalent natural drainage effect, is se-

12. Ranney, Leo, U. S. Patents 1,634,235 and 1,634,236, granted June 28, 1927.
13. Ranney, L., "The Ranney Process of Mining Oil" see "Petroleum Development and Technology in 1925," pp. 315-326, a book published by the American Institute of Mining and Metallurgical Engineers, May, 1926.
14. Ranney, L., "Presents New Cost and Recovery Data on Oil Mining Process", NATIONAL PETROLEUM NEWS, Aug. 18, 1926, page 51.
15. Casamajor, P., U. S. Patent No. 50,903 (1865).
16. Ehrat, A., "Methods of Draining Oil Sands through Bore-holes Drilled from Mine Openings", French Patent No. 528,061, August 1921, and British Patent No. 175,116, February 1922. Process described in NATIONAL PETROLEUM NEWS of November 5, 1924, pp. 63-67.
17. Smith, L. E., "Panhandle's Oil Mine in Electra Field is Near Operating Stage", NATIONAL PETROLEUM NEWS, Nov. 4, 1925. p. 31.

cured through the use of a system of oil mining patented in the United States by J. L. Rich.[18] By this method,[19] the mine entries are driven along the strike of the formation, either above or below the oil sand, and as near it, without actually penetrating the wall rocks, as conditions permit. After the mine drifts are completed, or at some distance behind the working faces, while they are in progress of excavation, a narrow slot is cut through the roof or floor of the drift—as the situation of the drift may require—and penetrating the oil sand.

If the slot is cut with a device that leaves the rock roof or floor of the drift reasonably intact, it will be possible to close the opening into the drift with some type of plate cover which will keep the gas and oil more or less confined, except at certain points where it is collected in sumps which drain into a gathering system. Mr. Rich has recently suggested a method for cutting the drainage slots which makes use of the abrasive action of a traveling steel cable such as is used in quarrying building stone, and has proposed the use of flood water applied through drainage slots as an aid to recovery.[20] (See Figure 5) on Page 74. The Rich patent covers also the application of fluids (water, steam, air, gas, etc.) through wells drilled inside of blocks or pillars surrounded by channeled galleries.

It is thought that a slot cut into the oil sand in this way will be as effective in draining oil as a gallery or drift of greater width. In fact, as complete a drainage effect may be secured if the slot extends for only a foot or two above the bottom of the sand body, for after drainage has proceeded for a time, the greater part of the oil flow is confined to the sands in the lower part of the productive stratum. For this reason it would appear to be more advantageous to drive the drifts below the oil sand rather than above.

Rich has offered estimates of the cost of mine development by his system of drainage, ranging from $660 to $4090 per acre, depending upon the spacing of drainage tunnels and slots: $2640 is suggested as a reasonable average figure. If recoveries equivalent to those secured at Pechelbronn be assumed (24 bbl. per linear foot of drift), and if oil is worth $1.50 per barrel, each acre should return $6864 in profit above development costs. Operating costs would be comparatively small.[20]

A somewhat similar process to that of Rich is that proposed by Mr. M. Lagrogne,[21] which has been experimented with to some extent in the Pechelbronn mine. The mine galleries are in this case driven above the oil sand and the slots are cut in the floors and enclosed below the floor planking. Covers are fitted to the grooves so that comparatively little of the heavy vapors escape into the mine workings.

Still another method that has been proposed for securing additional oil from partially-drained oil sands, consists in sinking a shaft to intersect the productive sand and then drilling long holes radially in all directions to drain the oil at remote points. Such a system was patented as early as 1865 by Casamajor[22] and more recently, in a modified form by Wright.[23] (See Figure 6) on Page 76.

The holes could probably be advantageously excavated with a diamond drill capable of drilling horizontal holes, say two or three inches in diameter, to a distance of half a mile or more from the shaft.

In comparison with production through vertical wells from the surface, this method of exploitation has the advantage that all parts of the productive sand are penetrated by the drill, so that the oil has to flow but a short distance to find an outlet. From the standpoint of cost, holes of the character described could be drilled for but a small fraction of the cost of a mine drift. In unconsolidated oil sands, difficulty would be encountered in the tendency of the holes to cave, and in most sands it would probably be necessary to provide a light perforated and screened liner or casing. Flow of oil into the drainage holes could be encouraged by connecting them with a vacuum pump at the wall of the shaft. Oil draining from the bore holes into the shaft would be stored in the shaft sump from which it would be pumped to the surface.

18. Rich, J. L., "Process for Extracting Petroleum by Underground Workings", U. S. Patent 1,507,717 (1924).
19. Rich, J. L., "Possibilities of Petroleum Recovery by Mining", Engineering and Mining Journal-Press, June 6, 1925, pp. 919-924.
20. Rich, J. L., "Proposed Method of Oil Recovery by Combined Mining and Flooding", see "Petroleum Development and Technology in 1926" a volume published by the American Institute of Mining and Metallurgical Engineers, May 1927, pp. 353-358.
21. Lagrogne, M., "Notice sur l'exploitation par puits et galeries des gisements petroliferes", Annales des Mines, April 1921.
22. Casamajor, P., U. S. Patent No. 50,902 (1865)
23. Wright, R. L., U. S. Patent No. 1,520,737 (December 1924)

Uren's Conclusions

THIS is the second of two articles reviewing the recent literature of oil mining. In these articles it has been shown that drainage of partially exhausted oil sands through underground mine openings is technically and economically feasible under favorable conditions at the present time. This method of recovery has been proven capable, under the conditions prevailing in the Pechelbronn oil field, Alsace, France, of producing two and one-half times as much oil as was previously produced by ordinary methods of drainage through drilled wells: and this from territory that had been previously drained to economic exhaustion by common methods of exploitation. There is nothing unusual in the conditions prevailing in the Pechelbronn oil field tending to indicate that the methods of exploitation through mine openings there employed, will be inapplicable elsewhere, and there is no apparent reason why the mining method may not be successfully employed in many oil fields in other regions.

The sinking of shafts and driving of drifts through bodies of oil sand require a special technique not exemplified in the mining of any other mineral product. Comparatively safe and effective methods have, however, been developed in projects that have been operating over a period of from five to ten years. Improved methods of recovery, involving drainage through secondary controlled openings, admit of mining under much more favorable conditions, and by facilitating the use of artificial drainage forces, promise a greater percentage recovery.

The cost of producing oil by drainage through mine openings will compare favorably with other methods of recovery that may be applied in fields that are no longer profitable producers by ordinary natural-flow methods. The unit cost by the mining method practiced at Pechelbronn is probably lower than the unit cost by flooding in the Bradford field. The unit cost by mining will probably be lower than by artificial pressure restoration through wells if carried to the degree of recovery possible by the mining method.

An oil mining project should be undertaken only after careful engineering study of all of the physical and economic factors involved. Test holes should be drilled and cores of the productive sand secured for determination of the essential information relative to sand conditions and oil saturation. There are many opportunities for profitable investment of capital in partially depleted oil-producing properties, for exploitation by mining methods, if reasonable caution is exercised in their selection.

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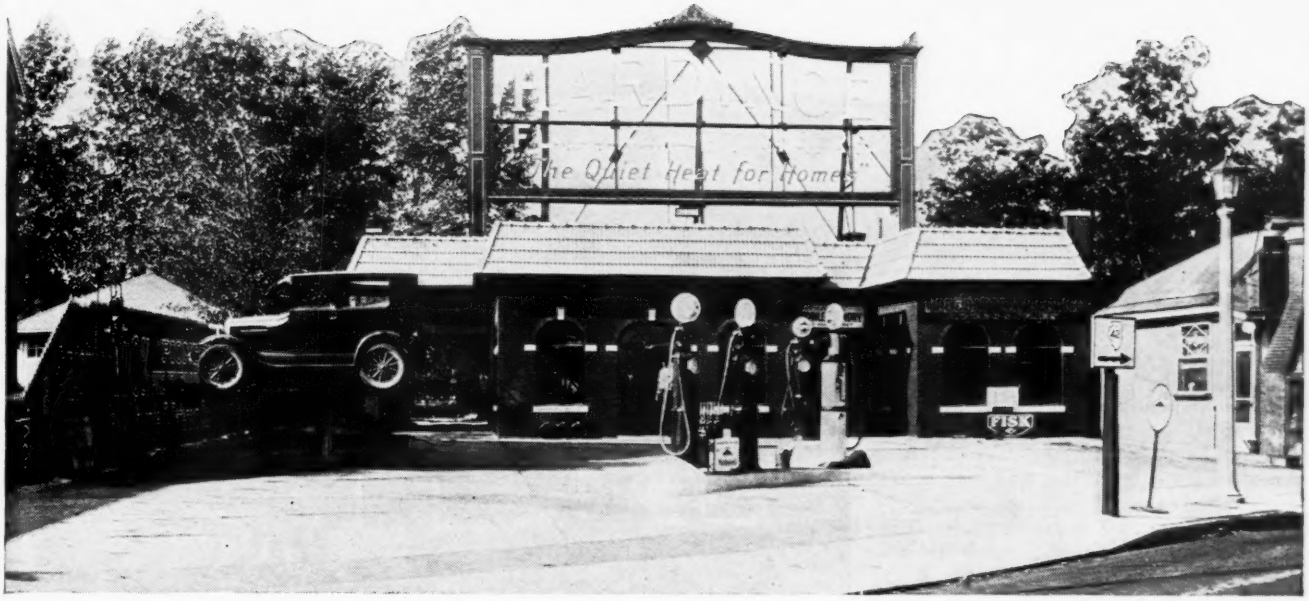

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N. P. N. STAFF WRITER

CHICAGO, Oct. 1

SERVICE stations of a new kind are making their appearance in Chicago and making themselves felt. They are equipped with all the service features a motorist can ask for except important mechanical repairs and all winter storage. Those two latter services are still expected of the modern garage.

Super service stations of the "California Type" have been talked about a great deal by oil men in the middle west for four years. Early experiments in stations of that kind were not successful, however, because they were too much like the California stations and not suited to a colder climate. Some of the older, cheaply constructed places in Chicago and vicinity had to be abandoned. The newer ones are permanent structures, not much spread out for the most part, and show interesting architectural developments.

Two of the most complete ones in Chicago are about 24 miles apart. They could not be much farther and both be in Chicago. One is a private enterprise selling Standard Oil Co. products, and the other belongs to the Geo. C. Peterson Co., Independent jobbers in Chicago, and North Shore suburbs.

Both stations have eight separate departments, seven in common. They both have (1) gasoline, (2) oil and crank case service, (3) greasing, (4) washing, (5) tire sales and service, (6) battery sales and service, and (7) accessories. The Peterson station has an open-air parking ground in connection with it while the private establishment has a repair shop under the same roof.

The main difference in the way the two operate is that the oil jobbing company subordinates everything to merchandising gasoline and lubricants. The partnership of Fred C. Rauch and William J. Weberg, the privately operated station, makes more of a leader of tires and batteries.

GEORGE C. PETERSON'S station is at Sheridan Road and Juneway Terrace, on the well known "Calvary Turn" in Sheridan Road where it leaves Chicago and enters Evanston, skirting Calvary cemetary. Driving northward on Sheridan Road a motorist can see the Peterson station for a mile. It would be hard to pick a more conspicious location.

Oil companies seem to agree this is a desirable location, for there are four filling stations on the turn, on the same side of the street, in a distance of half a block. The nationally known, north and south thoroughfare turns east and west for that short distance and The Texas Co., Standard Oil Co., and Sinclair Refining Co. have stations there on adjoining lots. Between The Texas Co. and George C. Peterson's station is a barbecued chicken establishment. Peterson's location is most conspicuous, with ample frontage on Sheridan Road extending back to the Alley.

On the spacious, paved front five pumps offer three grades of motor fuel; Pioneer gasoline at 18 cents, the going price of Red Crown; Super Pioneer, a high test, at 21 cents and a benzol blend also at 21 cents. All are Peterson's own brands. There is a rotary lift on the front drive and two drain pits.

Back of the concrete drive is the station building, which covers the entire lot, except space enough to drive a car between the wall and the property line. This is the entrance to a fenced lot behind the building used for parking automobiles. The lot is not paved, but has a covering of cinders. The largest compartment of the building is the automobile laundry, rectangular in shape with the broad side toward the street, paved with concrete, draining toward a sump in the middle of the floor.

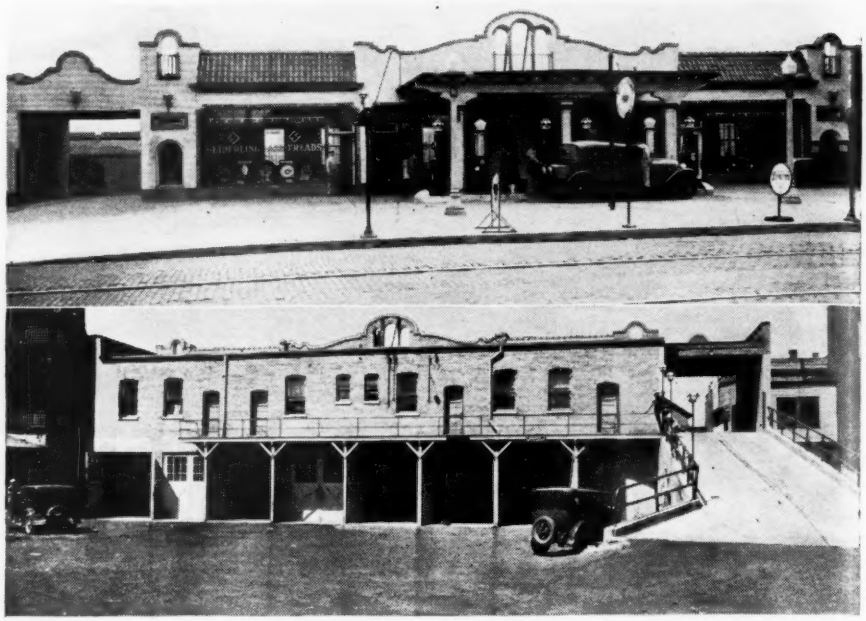
IN FRONT of the automobile laundry are two attractive little sales rooms, extending outoward the street. One is the office of the oil company and contains neat rows of motor oil drums, arranged against the wall.

It also houses the desk of E. G. Anderson, the man in charge.

The other sales room is an accessory store, tire and battery store and service department. That space is leased out and the oil company exercises no supervision over it except to see that its merchandise and service are up to standard. The man in charge sells tires and makes tire repairs. He also sells batteries and gives battery service. The front end of the room is used for display of a line of parts and accessories.

The oil company operates the laundry with two colored washers under Mr. Anderson's supervision. The front end of the business employes two white, uniformed attendants. They sell the gasoline and motor oil and take care of the greasing under Anderson's supervision. The main entrance to the laundry is between the two sales rooms. Cars that enter there and are washed can return to the street by the big door to the left of the oil sales room, or they can be driven by an attendant into the parking space to await the owner's return. Exit from the parking ground is through the laundry or around the end of it.

All the stations's storage is buried below the parking space in the rear. Besides tanks for the three grades of motor fuel there is also a furnace oil tank. The whole establishment is heated with a Hardinge burner consuming the station's crankcase drainings. Three grades of motor oil are carried in stock; two of Peterson's own brands and a nationally advertised brand. Peterson sells a Mid-Continent motor oil for 25 cents a quart, a pure Pennsylvania product for 30 cents, and Mobiloil. On top of the station building is a huge electric sign advertising the Hardinge burner.



Top picture shows Michigan Ave. level of super service station operated by the firm of Rauch & Weberg near the southern city limits of Chicago. Eight businesses under one roof and lower view shows rear elevation. This level is reached by paved alleys from 115th and 116th streets and by ramp from Michigan Ave.

THE privately owned station is between 115th and 116th streets on South Michigan avenue. It was built by Teninga Bros. & Co., realtors, who intended renting it from the start; but those in charge of the place say the lay-out is excellent. It is unusually ornate and two stories high, the upper story having its floor on the Michigan avenue grade, the lower floor fronting in the opposite direction on a vacant lot accessable by paved alleys from 115th and 116th streets.

The two pictures of this establishment, showing front and rear elevation, tell the story of its unique arrangement. The upper compartment has a frontage of 125 feet on Michigan avenue and the building is set back well from the street. Six pumps stand in a row on a concrete island in the middle of the drive with a canopy over them. Red Crown gasoline, Ethyl Red Crown gasoline and Soline (Standard Oil Co.'s high test gasoline) are available there.

Under the canopy in the middle of the long building are entrances to the comfort stations, and on either side of the canopy are two store rooms with plate glass fronts. At the extreme right is the accessory store, carrying a complete line of automobile accessories and parts. This department even goes in for novelties such as goggles, sun visors, flashlights, sponges, jacks, and the like.

Next door to the accessory store is the battery department. The firm employs a man to run it. He sells Philco batteries and also gives battery service to motorists. The demand for radio batteries has been such that this department has gone in extensively for radio, catering to the local fans in every way except to sell receiving sets.

Next to the battery department is the oil and grease departments. This room carries four brands of motor oil; Veedol, Quaker State, Polarine and Crystal. This room also houses to office of the management.

Adjacent to the lubricating oil department is the tire service and sales department. It is operated by an employe who sells tires and makes tire repairs. Rauch & Weberg are local distributors for Seiberling tires and next to gasoline, tires is the main part of their business.

Next to the tire sales room is a ramp, just opposite the left-hand entrance to the station a motorist may drive through the passage way and down the ramp to the vacant lot behind the building where he may turn into any of the three departments that are below the Michigan ave. level. The automobile laundry, greasing department and repair department are down there. Space for the repair department is leased to an individual who manages his own business. The greasing and washing departments are leased together to another individual who also operates as a separate institution.

With Rauch & Weberg, the division of the business is literally horizontal. They themselves run what is on the upper level and they lease out what is downstairs, largely as a matter of convenience. Two men besides the management work on the Michigan Ave. level. One is a battery man and the other a tire man. The partners try to handle the gasoline and motor oil sales themselves, but on exceptionally busy days they have to have help. Nobody stays in the accessory department regularly. Any of the four men are supposed to sell accessories on request.

The gasoline for this station is buried under the drive way, and there, is just behind a concrete retaining wall from the departments on the lower level. The coal burning heating plant is just below the tire store.

"INDUSTRIAL trade is our main stay in this neighborhood," said Mr. Rauch in discussing his gasoline business. "Either Mr. Weberg or I spend a good part of every day on the street. Competition is such that we have to go out and get the business. We advertise some in local papers but the most of our advertising is by direct mail to the automobile owners in the neighborhood. Some of this direct mail advertising is prepared for us by the tire people, some by the battery people and the motor oil

manufacturers. We use that to advertise ourselves and our location to the consumers in the neighborhood but the best work we do is soliciting big accounts.

"This is an industrial community, with a great many industries, some of them small but with good credit. As distributors for Seiberling tires we are expected to do a lot of selling and carry some accounts. We work our gasoline sales right in with that. We try to get all the business there is from any company's fleet of motor trucks on gasoline, oil, tires and batteries.

"Our industrial business has grown as a result of personal solicitation. We make all the price concessions that the Standard Oil Co. makes. They supply us but after all we are competitors of theirs and have to meet their quantity discounts. If we get as much industrial business as we hope, we will not be able to take care of it all in the early morning on the Michigan Ave. level and hope to install a pump and tank for their accomodation in the vacant space behind the building where big trucks will have plenty of room to come in and turn around.

Oil Monopoly in Spain Proposed by Banks

WASHINGTON, Oct. 3.—An oil monopoly is being considered in Spain which would have exclusive right to import, refine, distribute and sell petroleum products, as well as to take over all oil companies now privately owned and operated, according to advices received by the Department of Commerce from the U. S. commercial attache at Madrid. The council of state, which helps the dictator administer affairs in Spain, is now considering acceptance of a bid from a syndicate of 37 leading banks which is favoring such an organization.

Promoters of the monopoly propose an organization with a capital stock of 195,000,000 pesetas, something less than $40,000,000. The government would receive 45,000,000 face value, of capital stock as pay for the exclusive privilege. Thus far there has been no suggestion that Americans with oil interests in Spain will not receive a fair price for their property, it is said.

LOS ANGELES—J. E. (Brick) Elliott, head of the Elliott Core Drilling Co., headquarters at Los Angeles, who thinks more of sailing his yacht than playing golf, sailed from Los Angeles Sept. 23 for Catalina Island with members of the Wildcat committee of the Chamber of Mines and Oil as his guests. He promised them nothing, other than safety and something to eat, but every member of committee knew that Brick had something unusual in store for them.

Make them *Remember* your Filling Stations

MOTORISTS are rarely nearby when they need to buy gas. Unless the brand you supply and the locations of your filling stations are strongly identified in their minds, many potential sales will be lost.

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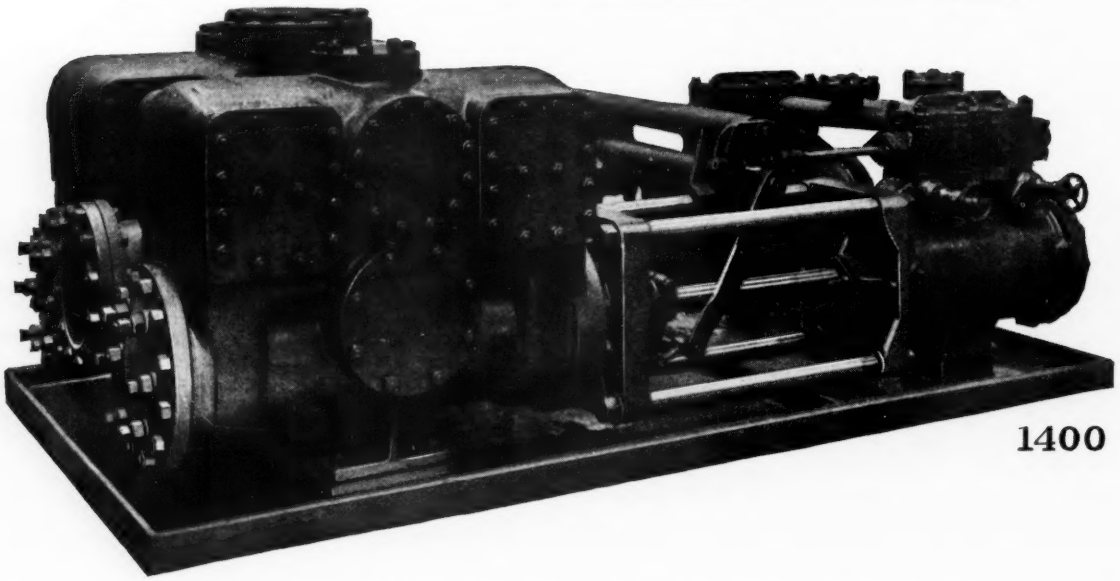
ICE COLD OR RED HOT

The temperature of the fluid pumped is immaterial

Jacob Bigelow, a very learned Doctor, was professor of materia medica at Harvard College. He acknowledged he was selected because he knew more about the worthlessness of drugs than any other living man.



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WE brought out our line of Block Valve Pumps for about the same reason. We knew the worthlessness of all the existing types of pumps when it came to handling hot tar, or anything hot or thick, or both.

The valves of the Block Valve Pumps are large blocks, and the valve seats are large rectangular openings capable of handling most anything, including gobs or chunks.

The fluid end is so constructed that any part can expand or contract without any detrimental effect.

Fluids or semi fluids up to 500° F. can be pumped easily. In fact, one of our shop men reports seeing a Block Valve Pump handling tar so hot that he could see the glow of the fluid end on a dark night. The fluid end was red hot.

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Absorption Plant in Refinery Pays Its Way Handsomely in Gasoline

By D. F. Gerstenberger

Article 4

THE absorption plant in the refinery pays its way about as much as any individual piece of refinery equipment that we have. I would not be far wrong in saying that there are about as many different types of absorption plants as there are refineries. They all follow, with the exception of the charcoal systems, the same principle, however, that of saturating an oil which has absorption properties with volatile gasoline fractions that are carried in the non-condensable gases, and the ultimate removal from the absorbing medium in most cases, of the fractions so absorbed.

Consequently, the problem facing the refiner in considering the installation of an absorption plant, or the improvement of his present unit, is not usually one of method, but rather one of the particular equipment that he shall install to give him the best for his money.

It is hardly worth considering to design and erect your own absorption plant today. There are several manufacturers who have made a complete and thorough study of this phase of the industry and who are willing to install their equipment at a fixed price, and to guarantee its performance. As a result, they come in contact with practically every absorption problem that presents itself, and each purchaser of their plants gains the advantage of all the others' experience and problems. We will deal solely in this article with absorption with oil as a medium, which is the most common principle in use, and will try and point out the essentials of gas collection and plant operation to obtain the best results.

THERE are two main points from which gas must be collected. The first in order is the run-in-line and the look-box, which supplies the biggest volume. Second is the receiving tanks and gasoline tankage in general. For collecting gas from the run-in-line, or what is commonly called the tail-pipe, it were best to have a cylindrical drum about the size of an ordinary steel barrel, installed in this line ahead of the look-box.

The drum should set on end, and the inlet and outlet lines should be on opposite sides, about mid-way between the top and bottom. Through the center of the drum, set vertically, a baffle is welded. It should be absolutely gas tight at the top and the two sides and should extend to within about 12 inches of the bottom. Out of the top on the inlet side of the baffle runs the gas line, which conducts the gas into the gathering main.

The baffle prevents any gas from blowing through into the look-box, for it is sealed in oil, and the drum is sufficient in size to allow ample time for the separation of the gas from the oil. The look-box should be vented to the gathering main also, so that the same pressure or vacuum will be exerted on the stream on both sides of the baffle, thereby attaining a perfect seal at all times as well as taking care of any additional gas that might be freed in the look-box as a result of the turbulence of the stream.

Even on cracking systems, where the pressure is carried on the fractionating equipment right through into the receiving house, the writer prefers the individual gas separating drum which should be installed just beyond the point where the distillate comes out from under the pressure, to the so-called gas accumulator located at the distillate tanks. As the distillate comes out from under the pressure, it frees a goodly amount of light condensable vapors along with the gas that is liberated, and the individual drum gives more time for the separation of these volatile fractions from the distillate than is possible from the rapid turbulent flow of the total quantity of distillate through the average-sized gas accumulator, with its constant change in the head of oil through which the gas must escape. This method is possible only when the distillate can gravitate to the receiving tanks, however, but its advantages are plain, especially where the tankage is vented to the air.

GAS collection mains should be amply large to prevent any excessive pressure difference between the point of generation and the collecting equipment. The balance system in gas collection from tankage is considered good practice, and tends to cut down the amount of free air in the gas. With many tanks emptying their vapors into one collection main they will tend to balance each other, gas from standing tanks flowing back into ones which might be pumping down. Provisions should be made, however, to prevent pulling excessive vacuum on a tank, and to see that tanks containing sweet products do not vent into the same main with those containing sour products.

As a means of collecting low pressure vapors, the writer prefers compressors, except where low pressure absorption plants are in use, where the exhauster is a satisfactory piece of equipment. In recent years, some of the larger manufacturers have specialized on compressors for this purpose, usually fitting up their standard machines to withstand the corrosive effect of the gases.

Before the gas enters the absorption plant and compressors it should be scrubbed to free it of hydrogen sulfide and other corrosive ingredients. This will also improve the quality of absorption gasoline. The scrubbing has been successfully accomplished by passing the gas upward through a series of vertical drums, sufficient in size to retard the velocity considerably.

The drums may contain bubble plates, or may be packed with spiral tile or metal nipples, the first mentioned undoubtedly being the most desirable. In the first drum, the gas is washed with water, and in as many

Treating of Gasoline

In article 5 of this series, to be published in an early issue, Mr. Gerstenberger takes up the subject of treating of light oils. He describes the different methods of treating with the advantages and disadvantages of each and shows designs of continuous treating plants.

The article tells the refiner some simple methods of determining whether his gasoline is all right as he is shipping it or whether it contains possibilities of trouble for the motorist and should be treated. Several simple methods and treats that have been found successful in handling gasolines of various characteristics, are described in the article.

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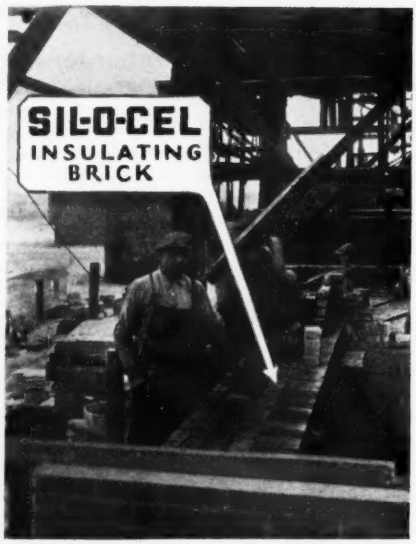
Lay up in a furnace wall just like fire brick

IT IS EASY to insulate a furnace wall with Sil-O-Cel brick.

These insulating units are installed between the firebrick and the outer red brick or concrete wall where they fit in place exactly like a course of firebrick.

Their proportions are the same as firebrick and they lay up in the same manner, with thin rubbed joints, so that they can easily be bonded to firebrick.



Building an insulated furnace for the Jenkins Cracking Process in the plant of Bartles Maguire Oil Company, East Chicago, Indiana.

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The insulating value of Sil-O-Cel Brick, inch for inch, is seven to ten times that of average firebrick.

One course of Sil-O-Cel C-22 brick, (4½ inches), is used ordinarily behind nine inches of firebrick in the walls of cracking furnaces to reduce radiation losses and to protect the concrete foundations from spalling temperatures.

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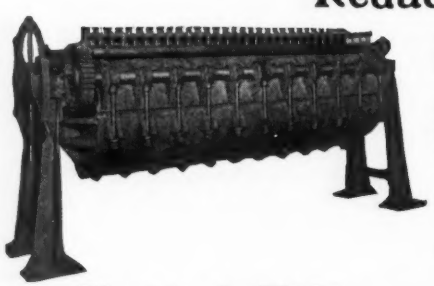
Break Up Emulsions—
Reduce B. S. Contents



HERE'S a big loss that can be greatly reduced.

Sweetland Pressure Filters have been tried and with great success for breaking-up emulsions and for reducing B. S. content.

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additional drums as necessary, with caustic soda. Waste spent soda suffices where available, provided it still has a reasonable trace of alkalinity.

If the drum is sufficiently large, the bottom may be used as a reservoir and a certain amount of the chemical can be charged into it at frequent intervals. A small pump circulates the chemical, spraying it back over the top section of the drum and it flows downward, scrubbing the rising gas. The caustic is renewed after its chemical value is used up A settling drum should be placed beyond the last chemical drum to prevent the carrying over of any of the chemical to the compressors. A means should also be provided for caring for any oil condensate that might accumulate in the drums.

The pressure absorption plant provides the best equipment for economical construction. Much has been said for its advantages from a yield standpoint, but the difference in construction cost is sufficient to warrant its use. Besides, it is much better to build a small, compact, easily operated plant, than to go to the enormous amount of surface necessary for the low pressure plant.

In deciding on the type of exchangers, preheaters, and coolers, consideration should be given to the efficiency of this equipment, plus its accessibility for cleaning and repair, and the cost of repair parts. Also, its resistance to any corrosive action that the gases might have. This equipment were best installed in multi-units sufficiently small for each step in the operation, to enable each unit to be cut out individually for cleaning or repair without handicapping the operation.

THE absorber, altho dependent to a great extent, on the temperature of the oil and gas entering it, should be of the proper design and of sufficient capacity to enable it to properly strip the gas. The bubble tower absorber comes highly recommended as a very efficient piece of equipment, and hand in hand with it goes the bubble tower still, for properly stripping the fat oil. Stabilizers beyond the still are desirable without question. Increased yields are claimed for them, and probably increased eventual yields, or the actual amount of gasoline obtained as a final blended product are certain, but aside from this is the elimination from the final product of undesirable constituents.

The compressor speed should be maintained by a vacuum regulator which controls the compressor by the amount of vacuum desired on the gathering mains. So much for general methods of collection and types of equipment.

The process itself should be handled to follow certain general rules. In

addition to these are certain points which will help in some cases to add what we might term, free gasoline. To begin with the absorbing medium does not necessarily have to be what is commonly sold as mineral seal oil. This is especially true where the gasoline obtained from the absorption plant needs treatment before blending. It should be a gas oil, with good initial boiling point, which if possible, should be about 25° higher than the end-point on the gasoline. The decided gap, makes for ease in rectification. Also it should have a good slop test, or emulsion test. In some cases, the bottoms from the steam or rerun stills make a good absorption oil, the advantage being their previous chemical treatment.

SUFFICIENT laboratory distillations should be on the lean and fat oil to determine the percentage of leanness or fatness, and to maintain them at their proper saturation points. Unless the absorber is overloaded, it were best not to exceed 10 per cent saturation on the fat oil, the point of saturation being taken as 374° Fahr. in the distillation. Of course, the lean oil should always be stripped to at least 1 or 2 per cent saturation, and lower if possible, effort being made to maintain the 400° initial boiling point of the original absorption oil when it can be done.

The gas which is vented from the fat oil can be taken back through the system again, but the gas that vents from the receiving tanks in the event that stabilizers are not used, although perhaps containing some condensable vapors, usually is made up of very wild fractions, and if returned through the system, simply builds up a cycle gas which will overload the entire equipment as well as cut down its production. Consequently such gases should be vented to the burning line.

Where possible, the gas should be cooled to 80° Fahr. or lower, and the absorption oil to 70° Fahr. or lower. The cooling of the absorption oil is more important than the cooling of the gas, although both play an important part in the results obtained.

If a separating drum or trap be placed in the gas line between the compressors and the gas coolers, the lubricating oil which is carried from the cylinders of the compressors will be caught, and the gasoline condensate which will be drained from the gas coolers will consequently be good color, and can go directly to the gasoline tanks. Otherwise, this condensate must be mixed with fat oil, and pass through the steam still, and the continued accumulation of lube in the absorption oil as a result, is liable to cause emulsion trouble. This is, of course, aside from the addi-

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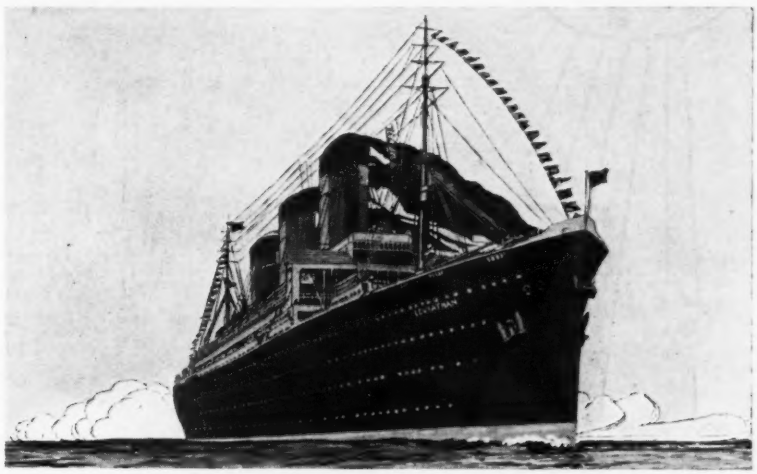

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For three years the colossal Vaterland lay uncared for at a Hoboken dock, in water laden with sewage and corrosive acids. It was a long time for a steel hull to be exposed to such destructive forces—yet, when the ship was reconditioned and renamed the "Leviathan", inspection showed that the underwater plates had suffered little from their gross neglect. And the reason lay solely in the fact that they were made of steel with a copper content.

Now Sistersville Oil Field Run Tanks . . . . that are usually victims of neglect . . . . are also made of high copper content steel. Its use adds slightly to the manufacturing cost, but it makes the most durable tank that can be fabricated. And that is the Sistersville policy: To produce the best tanks that can be built for every use and service.

We will gladly send you descriptive literature and prices on the kind of tanks in which you are interested.

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Automatically regulate temperatures, pressures, liquids, air, etc., and eliminate spoilage.

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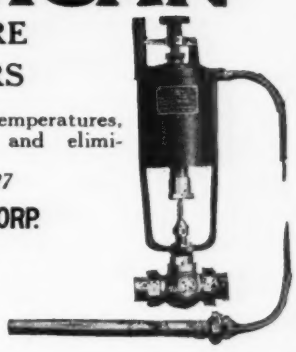
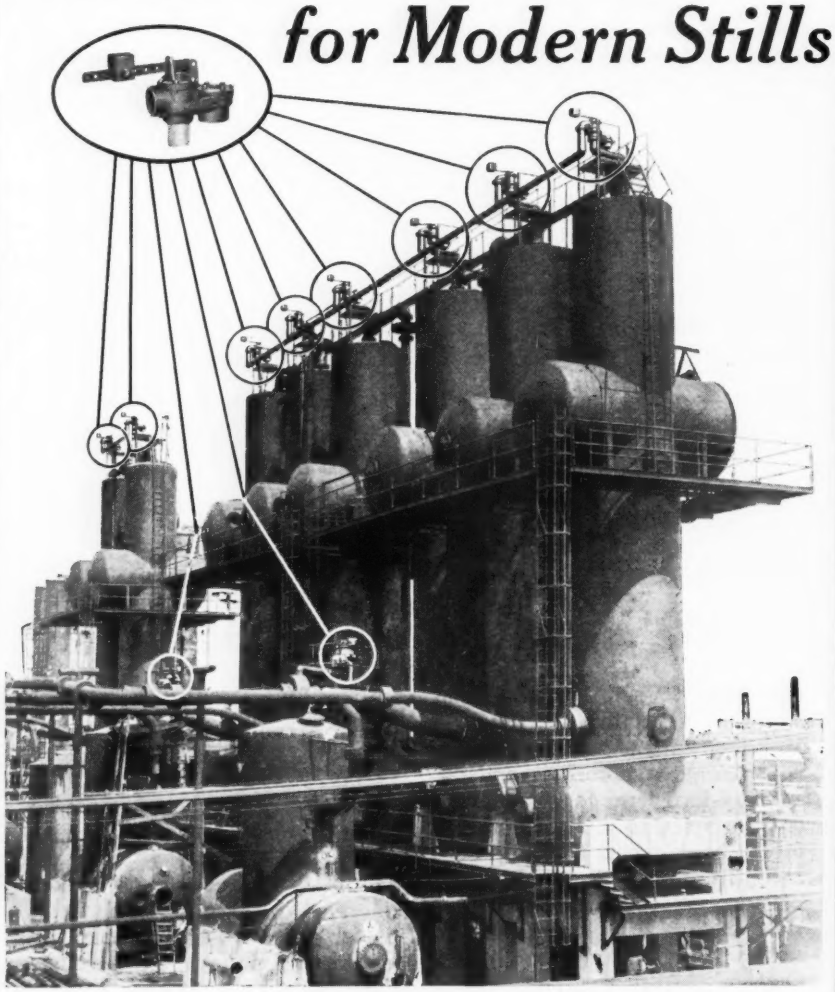


Modern Safety Valves for Modern Stills



A FEW years ago refiners *could put up* with old style still safety valves because conditions were not as severe as today.

Now, pipe stills and modern distillation apparatus demand something better.

For the past 5 years OCECO Still Safety Valves have been successfully meeting these modern conditions because in ***design, material*** and ***workmanship*** they have been ***built*** to meet them. Sizes up to 8 inches; pressure up to 30 pounds.

Send for catalog now. You will be interested also in Oceco Look Boxes and Automatic Tar Plugs.

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tional cost of performing this unnecessary distillation.

In refineries where the absorption plant is not large enough to handle the peak loads, it is possible to make it pay off with free gasoline by diverting somewhat from the set rules at times. Let us assume for an example that the maximum capacity of our absorption plant is 5,000,000 cubic feet per day. Let us further assume that with all the stills in operation, the refinery produces 7,000,000 cubic feet of gas. This condition should not exist, of course, but it is surprising to find out how often it does.

On a certain day, and as previously scheduled, a sufficient number of stills are taken off for cleaning, to cause the refinery gas production to fall off during their down period to say 4,000,000 cubic feet. Five or six hours before these stills are scheduled to come down the absorption plant operator speeds up the plant so that by the time the stills in question are shut down, the saturation point of the fat oil has reached 25 or 30 per cent. In other words, it is saturated beyond the point where the still can strip it of its gasoline, and is carrying with it a certain amount of gasoline that we could not remove at the rate of circulation being maintained through the plant at that time. But by the time we reach this saturation point, the quantity of gas has dropped to the 4,000,000 cubic feet average, and consequently the circulation can be retarded somewhat, and the additional gasoline that we have stored up in the absorption oil can consequently be distilled over in say three or four hours, and the saturation point of the lean and fat oil will gradually return to normal.

IN SUMMER time, it is usually possible to handle more gas through the over-loaded plant, at night time, than during the day, because the gasoline content, due to cooler streams is usually lower. Also, in view of the fact that gasoline picked up at night time is somewhat lighter, it is sometimes found possible and practicable to increase the saturation point at this time, and still be able to strip the fat oil to the proper degree of leanness is the still.

Both of these methods for the overloaded plant, altho diversions away from the set rules of operation, pay free gasoline. Following these methods, the writer has seen a plant supposedly having a maximum capacity of 10,000 gallons of gasoline production per day, be made to average 17,000 gallons per day until such a time as additional capacity was added. This additional gasoline very nicely helped to pay out the cost of the additional equipment.

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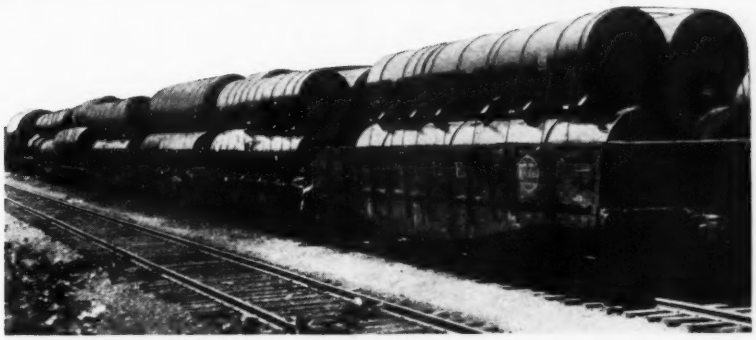

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Pumping Gaining in Favor at Seminole As Well Production Declines

By A. F. Hinton

N. P. N. STAFF WRITER

TULSA, Oct. 1

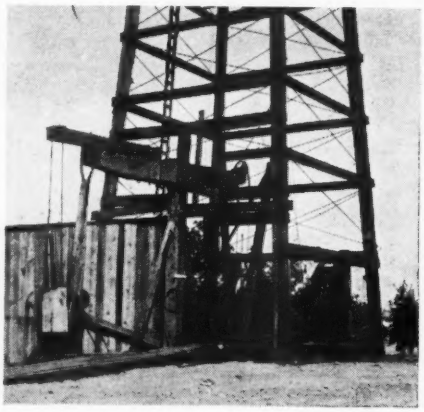
ALTHOUGH the air-gas-lift method continues well in the lead in production methods in the Seminole district, there has been a marked increase in the past two months in the number of wells pumping, especially in the old Seminole City field. This has been partly due to removal of compressor equipment to the Bowlegs and Little River fields, to handle later developments there, added to which is the reluctance of executives to authorize purchase of additional equipment to keep the small-production Seminole City wells on lift.

Another explanation of the increase in pumping is that as the wells decline to small output figures, it becomes more and more of a problem to keep them operating profitably on lift. When this stage arrives, and it becomes necessary to experiment, tendency of the production department seems to be to return to first principles and fall back on pumping, which they know to be an old-reliable method. By doing this, the gas-lift engineer is prevented from getting data on well-performance under small production conditions.

AS ONE engineer expressed it, almost anyone could put the wells on gas-lift and operate them successfully when the field was in its flush stage, although in many cases wells might have made even more oil if the lift had been properly installed or closer attention given to pressure and volume introduced.

When the wells have declined, however, and the fluid level drops, successful operation of gas-lift demands knowledge of its laws and strict application of engineering principles. At this stage of the game it becomes necessary to experiment with different sizes of tubing, and with various shifts in compressor equipment. A number of companies, however, have become impatient with this experimentation, believing the gas-lift a failure on small wells and have gone to pumping, although in all probability they could still be getting more oil at lower lifting costs by the newer method.

At present, there are 110 wells pumping in the old Seminole field, averaging 86.2 barrels per day each, as compared with 133 wells on lift, with average production of 413.0 barrels. As there were 321 wells in the field when this count was made, including 36 not producing for various reasons, the lift wells were 41.4 per cent of the total, and were making 71.7 per cent of the pool's production. Pumping wells constituted 34.3 per cent of the total, and were making 12.4 per cent of the production.



Typical beam pumping well in Seminole City field. N. P. N. Staff Photo

TWO months ago, Seminole City had 311 wells as compared with 321 at present, and its production then was 106,686 barrels as against 76,654 barrels now. At that time, 52 per cent of its wells were on lift, and were making 74.9 per cent of its production. Pumping wells then were only 19.9 per cent of the total number and were producing 4.4 per cent of the pool's output. Following is a comparison of the various production methods in the Seminole City pool as of July 15 and Sept. 15:—

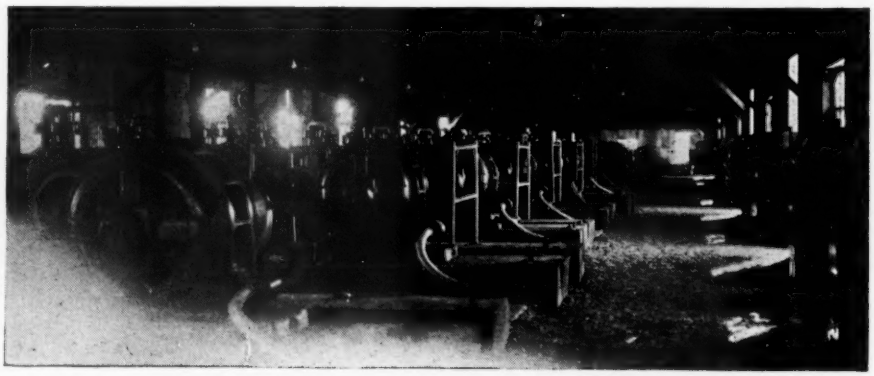
	July 15				Sept. 15			
	Wells	% of Total	Prod.	% of Total	Wells	% of Total	Prod.	% of Total
Lift	162	52.0	79,889	74.9	133	41.4	54,921	71.7
Flow	19	6.2	19,136	17.9	9	2.8	4,335	5.7
Pump	62	19.9	4.667	4.4	110	34.3	9.484	12.4
Swab	24	7.7	2,994	2.8	33	10.3	7,914	10.3
Off	44	14.2	.....	.....	36	11.2	.....	.....

Average production per well on the pump is so small, and the wells are down so much from various troubles that lifting costs are very high in most cases. One of the principal causes of trouble is rapid wearing out of rods, as these are subjected to terrific strains in a 4300-foot hole. Crooked holes, of which there are many, also cause rod trouble, as well as tubing trouble. Another source of down time is the shifting sand in some portions of the field. This sand floats into the well with the oil and causes a very rapid wear on cups.

TENDENCY in the field seems to be to put a well on the pump when it has gotten down to around 150 to 200 barrels on gas-lift, although there are of course many wells making less than that and still on lift. Gas-lift engineers are practically unanimous in believing that the wells now pumping could be making more oil and producing it at less cost and more steadily if they were still on lift.

However, at somewhere around 150 barrels production, it is likely that oil can be lifted as cheaply by pumping as by gas-lift—or it could be if the well could be kept pumping constantly, instead of being down from one-third to one-half the time.

One large company has figured that it costs about 3 cents 1000 cubic feet to compress air or gas with a gas-engine direct-connected compressor. A 100-barrel well will require about 2500 cubic feet per barrel, or 250,000



Electric-driven compressors for gas-lift, Carter Oil Co., Seminole district. This plant has 24 Ingersoll-Rand units with total capacity of 6 million feet daily. It is flowing 6 wells at pressures from 150 to 250 pounds. N. P. N. Staff Photo

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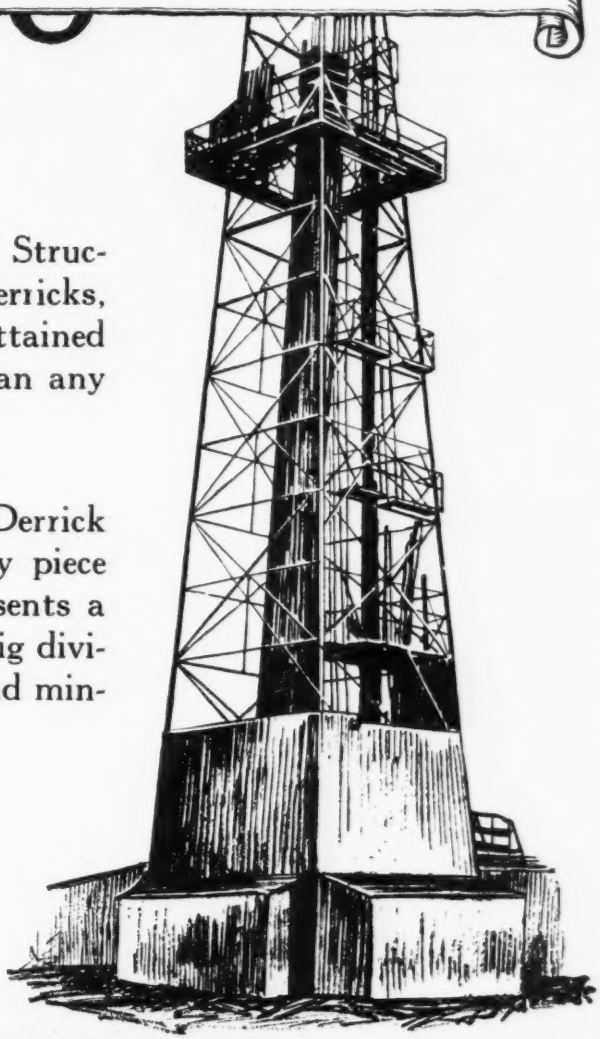

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cubic feet total. At 3 cents, this means $7.50 a day, or 7½ cents a barrel operating cost. To operate a 10-barrel well, to illustrate how operating costs rise as production diminishes, requires about 10,000 cubic feet per barrel, or 30 cents a barrel cost.

According to the same company, compression costs 7½ cents per 1000 feet where electric power is used. This would mean an operating cost of 18.75 cents a barrel for the 100-barrel well and 75 cents a barrel for the 10-barrel well.

ON AN actual pumping well, which of course cannot be taken as representing the entire field, but which probably is typical, actual lifting costs over a three-month period ran from 12.5 cents to 22.3 cents a barrel. Total operating costs, however, in which are included labor, overhead, and lost oil on account of down-time, ran from 31 cents to $1.04 a barrel. The figure on this well as as follows:-

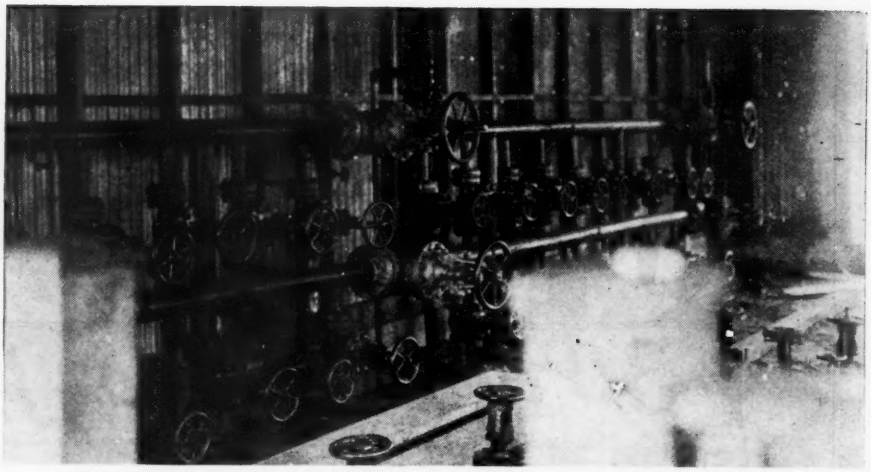
Month	Pumping Days	Down Days	Avg. Prod. Per Day	Lifting Cost	Operating Cost
June	21	3	202	$0.125	$0.31
July	19	12	186	0.223	1.04
August	26	5	113	0.159	0.41
Total	66	20	167	0.169	0.586

Up to Sept. 12, the well had been down 4 days and 7 hours, and had produced 628 barrels, or an average of 78 barrels daily during the 8 days it was pumping. Indications are that its operating cost for September will be in the neighborhood of $1 a barrel.

Another well was taken off gas-lift when it was making 200 barrels daily, and put on the beam as an experiment. It was cleaned out before being put to pumping. For the next three weeks its average production per pumping day was 75 barrels, and its highest production on pump was 129 barrels.

IT WAS down nearly half the time during this period. In another instance, a company drilled in a new well with only a small showing of oil. Efforts to pump it failed and the production department was about ready to give it up as a bad job and call it a dry hole. The air department, however, was allowed to experiment with it, and it is now flowing 125 barrels daily on lift.

In trying to keep small wells operating economically on lift, considerable experimenting is being done with tapered tubing, or in changing size of tubing to reduce the annular space between the tubing and casing, the idea being to reduce amount of equipment necessary to operate the wells while keeping production up. In many cases, this necessitates reversing the flow from the casing to the tubing. Larger sizes of tubing are placed at top, with diameters diminishing toward bottom of hole. It would probably work just as well with larger tubing at bottom, and wells flowing up the casing, but in such deep holes it is impossible to handle the tubing in this manner, on account of the great weight of the tubing suspended in the well.



Manifold for volume control, Pure Oil Co., Seminole district. N. P. N. Staff Photo

CARTER OIL CO., with 90 producing wells, has 15 wells flowing through tapered tubing, averaging 118 barrels each. It also has 15 wells pumping, with average production of 58 barrels per well. On gas-lift it has 52 wells, averaging 733 barrels each, not including those with tapered tubing. In addition, it has 8 wells flowing natural, with average production of 1,040 barrels. These figures are for the entire district. It is interesting to note that the tapered-tubing wells are averaging twice as much as the pumping wells.

MILLARD LAND
Gas-lift engineer, Pure Oil Co., Seminole field. N. P. N. Staff Photo

Another company had a well flowing about 141 barrels on gas-lift, using 2½-inch straight tubing in 6-5/8-inch casing, and requiring 700,000 cubic feet of gas per day at 120 pounds working pressure. The straight tubing was pulled, and four sizes were installed, as follows:—378 feet of 2-inch; 1,000 feet of 2½-inch; 1,322 feet of 3-inch, and 1,300 feet of 4-inch upset. With this hook-up, the well is making 130 barrels daily on 260,000 cubic feet of gas. Its "kick-off" pressure was 230 pounds and working pressure is now 100 pounds. It went dead when volume was reduced to 200,000 cubic feet. The operators were planning to use still another size of tubing by setting 160 feet of 5-3/16-inch casing on top.

THIS well is operating with a reduction in gas volume of 63 per cent, accompanied by a loss in production of only 8 per cent. Using the 3-cent figure as the cost of compressing gas, operating costs on this well have been reduced from 14.9 cents a barrel at 700,000 cubic feet to 6 cents a barrel at 260,000 cubic feet and only one compressor is necessary to flow it. This of course does not take into consideration cost of the tubing and labor in pulling the old string and running the new, and no account is taken of production lost while this work was in progress.

One of the best pumping leases in the field is the Franks property of T. B. Slick, in 35-9-6. This lease has five wells pumping 1,308 barrels daily, an average of 261.6 barrels per well. The best well is pumping 319 barrels a day and the smallest 222 barrels. There is one well still on gas-lift on this farm, producing 345 barrels daily at last reports.

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PHILADELPHIA

Our Industry — A Page of Facts and Personalities

National Petroleum News

By Paul Wagner

FRANCIS JOHN CULLINAN, son of the late Dr. Michael P. and Mrs. Cullinan, has returned to Laredo with his bride, formerly Miss Mary McAfee Woods, who for the last seven years has been an employee of the Mexican Gulf Oil Co., at Tampico. They spent their honeymoon in Mexico City. The new Mrs. Cullinan is the daughter of Mr. and Mrs. Courtland B. Woods. Mr. Cullinan's father was, until his death last winter, president of the Border Gas Co., a Laredo district subsidiary of The Texas Co.

* * *

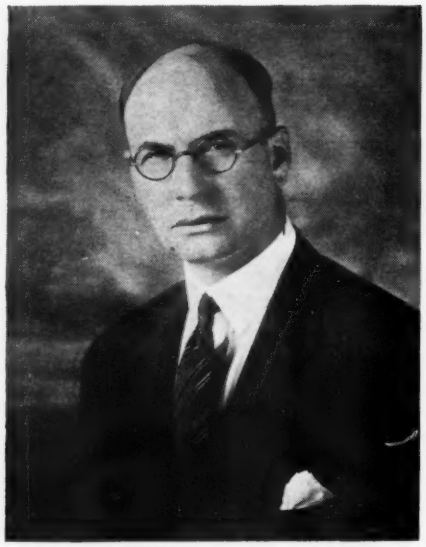
JAMES M. DOUGLAS, Venezuelan manager of the Union National Petroleum Co., has been spending some time in Los Angeles in connection with the company's development program in South America. He was officially transferred to Maracaibo last year by the Union Oil Co. of California, owner of an operating half interest in the Union National, from Fort Collins, Colo., where Mr. Douglas had functioned as Rocky Mountain chief geologist.

* * *

ANOTHER geological romance is only now becoming generally known, although no secret has been made among close friends of the marriage last July of Robin Willis of the research staff of Marland Oil Co. of Texas, Fort Worth, and Miss Alice Burke, private secretary to Dr. W. A. J. M. van Waterschoot van der Gracht, research director of Marland Oil Co. of Delaware, at Ponca City, Okla. Mr. Willis is a son of Bailey Willis, for years professor emeritus of geology at Leland Stanford university, but now retired.

* * *

ANNOUNCEMENT is made at Fort Worth of the resignation of additional members of the Independent Oil & Gas Co. staff following the earlier resignation of C. Frank Kelsey, vice president in charge of Texas operations. These resignations include those of Robert B. Violet, attorney; H. D. Collins, purchasing agent; and G. Frank Aldrick, chief scout.



WARNER CLARK

THE recent appointment of Warner Clark as southern district manager of the California Co., with headquarters at Colorado, Texas, brings to an important executive post another man who rose from the ranks. Mr. Clark has always been connected with operations of the Standard Oil Co. of California, of which the California Co. is a Rocky Mountain and Texas subsidiary, since leaving school. After he was graduated from the University of California, at Berkeley, he joined the field forces of the Standard in 1910 and soon worked up to the position of driller. He spent two years in the army and, upon his return to California, was made superintendent in the Santa Maria oil fields. In June, 1922, he was transferred to foreign service as superintendent in Ecuador for the California Standard Oil Co., which position he filled until his return to the United States four years later.

* * *

REMOVAL of southwestern division general offices of the Pure Oil Co., from Mexia to Fort Worth, has resulted in the transfer of a staff of about 100 persons headed by B. S. SoRelle, as manager. Departmental heads affected by the transfer included C. H. McDuff, general superintendent; R. A. Liddle, chief geologist; E. B. Stiles, assistant chief geologist; S. L. Cronin, land department; P. R. Smith, chief scout; C. A. Carman, purchasing agent; E. E. Edwards, assistant purchasing agent; R. B. Kelly, petroleum engineer; N. L. Thomas, head of sub-surface laboratory; Green Prescott, tax department; R. A. Toffelmire, rental department; W. H. Rhodes, traffic manager; W. H. Oliphant, time keeper; J. E. Bailey, chief engineer; R. M. Fulweiler, assistant chief engineer; R. A. Shepherd, attorney; Ira Needham, Jr., accounting department; C. C. Davis, assistant general superintendent; L. H. Murray, assistant cashier.

* * *

DOUGLAS R. SEMMES, now a consulting geologist of Cisco, Texas, and formerly head of the Tampico geological organization of the Mexican Eagle Oil Co., Ltd., (El Aguila) recently completed a 9,000 mile trip through parts of Canada, the western United States and Mexico.

* * *

ANNOUNCEMENT is made of the engagement of Franklin F. Devine, of Tampico, head of the land department of the Mexican Gulf Oil Co., and Miss Elizabeth Johnston Masterson of Houston. The wedding is to take place in November.

* * *

RAY W. RICHMOND, Corsicana division superintendent of Humble Oil & Refining Co., has resigned, effective Oct. 1, to enter a contract drilling firm to be known as Rowan & Richmond with headquarters in the Petroleum building at Fort Worth. Richmond had active charge of the Humble's field work in the Mexia, Powell and Wortham developments. Before entering the service of the Humble in 1920, Mr. Richmond had worked successively for the South Penn Oil Co., Hope Natural Gas Co., Shaffer Oil & Refining Co., Prairie Oil & Gas Co., Carter Oil Co., and Sun Oil Co., in various fields.

* * *

THE recent rise in the Panuco river, west of Tampico, brought joy to the heart of C. L. Proctor, general field superintendent of the Mexican Sinclair Petroleum Corp., who lives at Reventadero, on the river bank. Ordinarily Proctor's home is 35 feet above the Panuco water level, but the stream's rise made it possible for him to catch fish from an easy chair through the living room window.

* * *

E. P. CAMPBELL of the petroleum engineering department of Marland Oil Co. of Texas, is now stationed at Big Spring, Howard county, where he is dealing with field problems in that part of west Texas. Mr. Campbell was connected with Pure Oil Co. operations in Oklahoma before joining the Marland organization and, prior to that, was in charge of the Taft, Cal., offices of the Bureau of Mines.

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Before we too into the dust descend;
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Lord Cowdray and Family Visit Properties in Seminole

Lord Cowdray and party in the Seminole field. Front row, left to right, Honorable John Pearson, son of Lord and Lady Cowdray; Lord Cowdray; John M. Lovejoy, vice president and general manager of the Amerada Petroleum Corp. Back row, left to right, Lady Cowdray, Honorable Angela Pearson, daughter of Lord and Lady Cowdray; E. DeGolyer, president of the Amerada, and Mrs. DeGolyer

TULSA, Sept. 30

VISCOUNT and Lady Cowdray and their son and daughter, Honorable John and Angela Pearson, saw the Seminole oil district the past week. No mere sightseers, they toured the properties of the Amerada Petroleum Corp., in which Lord Cowdray has large stock interest. The Amerada's properties are producing nearly 22,000 barrels daily and are in all five of the pools which constitute the present Seminole district.

The party, which included E. L. DeGolyer, president of the Amerada, and Mrs. DeGolyer, arrived in Tulsa on Sept. 19 in a special car. The following morning they set forth for the Seminole district by auto. John M. Lovejoy, vice-president and general manager of the company; W. G. Ricketts, superintendent of production and Sidney Powers, consulting geologist to the company, were in the Tulsa office group that accompanied the party.

In interviews with local press representatives, Lord Cowdray disclaimed authoritative knowledge of the oil industry. It was his father, the late Viscount Cowdray, formerly Sir Wheetman Pearson, who established the name internationally in connection with oil. He died last April. Succeeding to the title and to the estates and industrial interests of several varieties, the present Lord Cowdray is now stockholder in the Amerada, the Rycade Oil Corp. and the Mexican Eagle Oil Co. He is publisher of several newspapers in England, controls large electric light, power and railway companies in Mexico and Chile.

The first Lord Cowdray was the son of S. Pearson, who organized the engineering firm of S. Pearson & Son, Ltd., many years ago. They built the first tunnel under the East river, New York City and the first subway in London, the harbor improvements and docks at Malta and Dover, England, Vera Cruz and Salinas Cruz, Mexico and the Isthmus of Tehuantepec railway. During the construction of the railway in 1902-3, oil seepages were found.

This was shortly after the discovery of Spindletop and the Pearson firm engaged Capt. A. F. Lucas, discoverer of Spindletop, as consultant to locate oil fields along the right-of-way. The first oil well that attracted attention was the Dos Bocas well which burned and cratered. Pursuing the quest, the Pearson interests were rewarded in 1909 with their first paying oil well, Potrero del Llano No. 4 which yielded more than 100 million barrels before it made salt water. This well is again producing.

E. DeGolyer, president of the Amerada, began his association with the Pearson interests in Mexico and his geological work was responsible for the discovery of the Los Naranjos field.

The present Lord Cowdray spent some time in Mexico many years ago and paid a visit to Tulsa in 1909, but has not been actively interested in oil since that time. The methods used in the Seminole district caught his attention, however, and he spent much time asking questions of the field men.

New Stations Building

Ironwood, Mich.—Supreme Oil Co. will build filling station.

Missouri Valley, Ia.—Standard Oil Co. of Indiana will build filling station.

Waterloo, Wis.—Hammer Oil Co. of Beaver Dam, Wis., is completing filling station here.

Corpus Christi, Tex.—L. M. Alexander is completing filling station which will be operated by P. O. Cox.

Fordyce Ark.—El-Ro Oil Co. will erect service station.

Hartshorne, Okla.—L. C. Claycomb is completing service station.

Blair, Neb.—Arndt-Snyder Motor Co. will build filling station.

Mt. Ida, Ark.—Z. B. Fry will operate service station now being built by C. H. Herndon, attorney.

Kimball, Neb.—Standard Oil Co. is building filling station.

Savannah, Ga.—C. W. Finfrock seeks permit for filling station.

Waterbury, Conn.—Three filling stations will be built at Torrington; one by John F. Baeder, one by Martin B. Dodd and one by Fred W. Barber.

Savannah, Ga.—Skeffington Realty Co. seeks permit for filling station.

Tallahassee, Fla.—Beatie Taff, of Taff Auto Supply Co., is completing filling station.

Hartford, Conn.—Six permits for filling stations are being sought by these: Delany-Chevrolet Co.; Randloph T. Nielsen; Michael A. Connor; William A. Young; J. M. Cohn and Max Weiner; and Richard T. Miles.

Sheldon, Ia.—Sam Sigman will build filling station.

Ainsworth, Neb.—Hewitt Bros. will build filling station.

Bayard, Neb.—Frank D. Ellermeier and William D. Kirkmon will build filling station.

Clermont, Ia.—Standard Oil Co. of Indiana is completing service station.

Enid, Okla.—Garber Bros. will build filling station.

Des Moines, Ia.—Roxana Petroleum Corp. will build three service stations.

Waterloo, Ia.—George Shirk is building filling station.

Washington C. H., O.—Louisiana Oil Refining Corp. will build service station.

Springfield, O.—Louisiana Oil Refining Corp. will build filling station.

Defiance, O.—Sentinel Realty & Investment Co., Dayton, O., will build filling station.

Scottsbluff, Neb.—Jack Wheat of Gering will build filling station here.

North Kimball, Neb.—Standard Oil Co. of Nebraska will build filling station.

West Plains, Mo.—Pierce Petroleum Corp. is completing filling station.

Deweese, Neb.—Harry Englehart will erect service station.

Fremont, Neb.—Robert Peterson will conduct the filling station now being erected by Clarence King.

Seaman, O.—R. O. Tener and J. W. Harsha will erect service station.

Leavener, Okla.—S. J. Loucks is completing service station.

Beaver Dam, Wis.—Wisconsin Power & Light Co. will build filling station.

Eagle Grove, Ia.—J. K. Baker is building filling station.

Topeka, Kan.—Phillips Petroleum Co. is building filling station.

Corpus Christi, Tex.—O. B. Carver will build filling station.

Ellington, Mo.—R. C. Jordan is completing filling station.

Wheeling, W. Va.—R. H. Derry and Lawrence Derry will build filling station.

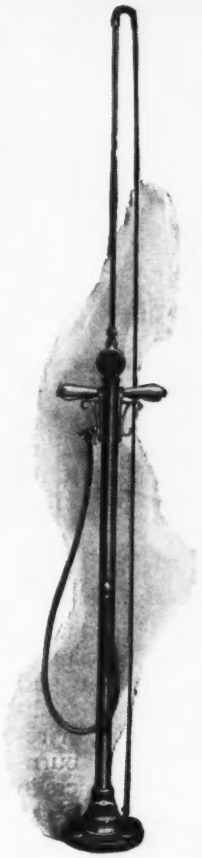
Portsmouth, O.—Pure Oil Co. is completing filling station.

Williamsport, Pa.—William Bloom seeks permit for filling station.

Montgomery, Ala.—Mrs. Georgia M. McGehee seeks permit for filling station.

Princess Anne, Md.—Gulf Refining Co. is building filling station.

CHAMPION



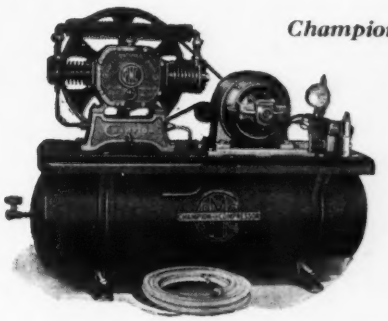
equipments are the standard of quality in the service and filling station field.

Such features as sturdy design for long life—no delicate parts—fool proof—quiet operation—low operating cost—few and very inexpensive replacements are to be found in all Champion equipments.

These advantages coupled with an unusually attractive first cost is the reason why thousands of stations are fully Champion equipped.

Champion Air Towers

Four styles embracing many new and exclusive features. Built to last—nothing to wear out—and priced very low. Write for special "Air Tower" bulletin.

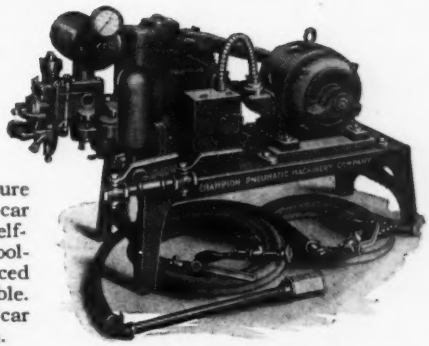


Champion Air Compressors

Single and Two stage units. Automatic, quiet running, low operating cost and extra long life. Ball bearing equipped. Many sizes and styles—priced to fit your need. Write for compressor catalog.

Champion Car Washers

Efficient, low operating cost. Built in two sizes with ranges in pressure to cover every car washing need. Self-oiling and fool-proof. Yes—priced very reasonable. Write for "car washer" bulletin.



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8168 So. Chicago Ave. Chicago, U. S. A.

WHEN YOU WANT QUALITY AND REASONABLE PRICES

Mixed Carload in Drums—or Tank Cars

"INVINCIBLE" MOTOR OILS

100% Pennsylvania or Western Blends

To Match Any Oil Made

WRITE A. D. MILLER SONS' CO.

Millers Oil Refining Works

PITTSBURGH, PENNA.

Oldest Pennsylvania Refiners

QUALITY
GUSTAFSON
SERVICE

ORGANIZATION-
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CO-OPERATION

THESE three important factors have an unusual significance to jobbers and industrial plant executives who insist on a positive, dependable source of supply of

Fuel Oil—Gas Oil—Distillate
Pennsylvania Lubricating Oil

The Gustafson organization is complete and has earned its present high standing in the industry because of specialization and co-operation. Experienced men are available to our customers for consultation regarding fuel oil grades for all types of burners, and to cooperate with our customers in solving the many problems peculiar to the jobbing business. This is a plus service operated in support of quality products.

Our Pennsylvania Lubricating Oils are shipped direct from the refinery in carloads and drum lots.

We solicit your inquiries for information and quotations.

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624 South Michigan Avenue, Chicago, Ill.
Cleveland Office: 1746 E. 12th St.

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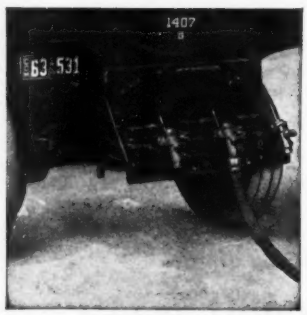
Sales Department:
R. D. Haynes—Geo. N. Olson, Chicago
J. E. Hansen, Cleveland Office



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give precise measurements of
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GRANBERG METERS installed on TANK TRUCKS provide a simple and accurate method of truck accounting by maintaining a continuous mechanical record of deliveries.

The use of GRANBERG METERS on TANK TRUCKS eliminates all chances of argument between the Customer and the truck Salesman.

Send For Our Literature

Associated Supply Company
Meter Department
79 New Montgomery St., San Francisco, Calif.

Music and Coffee Bid for Business

NASHVILLE, Tenn., Oct. 3.—Music and flowers at the Inglewood Filling Station of Leslie Burrus here, are two of the features which attract motorists to this station. The station is on the Jackson highway in a suburb of Nashville.

Not only are gasoline and oils handled, but also tires, batteries, and greasing and car washing departments.

A soda fountain and lunch room are conducted in connection with the filling station. Old-fashioned southern barbecue sandwiches and coffee are specialties of the lunch room.

Proving that music hath charms even for the hurried motorist, a popular orchestra is used to entertain on certain evenings of the week during the summer.

N. P. N. Ownership Statement

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of National Petroleum News, published weekly at Cleveland, Ohio, for October 1, 1927, State of Ohio, County of Cuyahoga.

Before me, a notary public in and for the State and County aforesaid, personally appeared A. W. Brobst, who, having been duly sworn according to law, deposes and says that he is the secretary of The National Petroleum Publishing Company and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, The National Petroleum Publishing Company, Cleveland, Ohio; editor, Warren C. Platt, Cleveland, Ohio; managing editor, V. B. Guthrie, Cleveland, Ohio; and business managers are: None.

2. That the owners are: Warren C. Platt, Cleveland, Ohio; Bess H. Platt, Cleveland, Ohio; V. B. Guthrie, Cleveland, Ohio; A. W. Brobst, Cleveland, Ohio; Wm. H. Little, Tulsa, Oklahoma.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of the total amount of bonds, mortgages, other securities are None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holders appears upon the books of the company as trustees or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiants' full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise to paid subscribers during the six months preceding the date shown above is (This information is required from daily publications only.)

(Signed) A. W. BROBST,
Secretary

Sworn to and subscribed before me this 27th day of September, 1927.

(Signed) H. L. RICHEY,
Notary Public

(My commission expires 5-7-30.)

Above are shown two Butler Truck Tanks and three Butler Visible Pumps. Underground is a Butler Tank. All these are at Joplin, Missouri.

In the past 10 years!

The satisfaction that the W. P. Bagby Oil Company has received in using Butler Filling Station Equipment is evidenced by the amount of Butler Equipment that it is now using and has used over a period of ten years. It has about twenty Butler Pumps and many underground tanks, truck tanks and other complete filling station equipment.

Butler Truck Tank Features

There is a good reason why the Bagley Oil Comdany and others appreciate Butler Truck Tanks. Just note these Butler features: 8-inch adjustable sills (you can change your tank from one chassis to another), bilged heads and partitions (to prevent vibrations and ultimate leakage), 6-inch fill openings, special plugs with handles, full-flow triplex air vents, drop panel side can rack, Butler Lacquer Finish (like that on the finest pleasure cars) sprayed on and other desirable features. Butler Oil Equipment Catalog describes them. Send for the book today.

Butler Visible Pump Features

It is easy to see why the Bagby Oil Company and others appreciate the Butler Visible Pumps. They are symmetrical in lines and substantial in construction. The ornamental castings and the whole appearance of the pump are attractive.

Butler Visible Pumps are quiet running, they are remarkably fast — 15 full strokes fill the 10-gallon cylinder in about 22 seconds! This speed is due to the double-acting plunger type of pumping unit.

Four models: Hand Operated with Underwriters' Label, Air Operated, Hand and Air Operated, Hand Operated without the Underwriters' Label.

Send for prices

It will pay you to look into Butler Truck Tank and Butler Pump advantages. Write for full details, prices and gold circular.

Butler Oil Equipment Catalog is complete. It contains useful handy information. 96 pages, illustrated in 4 colors. Copy sent on request.

TRADE STEEL BUTLER PRODUCTS MARK

Butler Products include: Ready-Made Steel Buildings, Cans, Funnels, Buckets, Measuring Pumps, Truck Tanks, Underground Tanks, Storage Tanks, Bolted Tanks, Etc.

Butler Manufacturing Co.

Kansas City, Mo. **Minneapolis, Minn.**

New York Office: Room 701, 44 Whitehall St.

BUTLER TRUCK TANKS

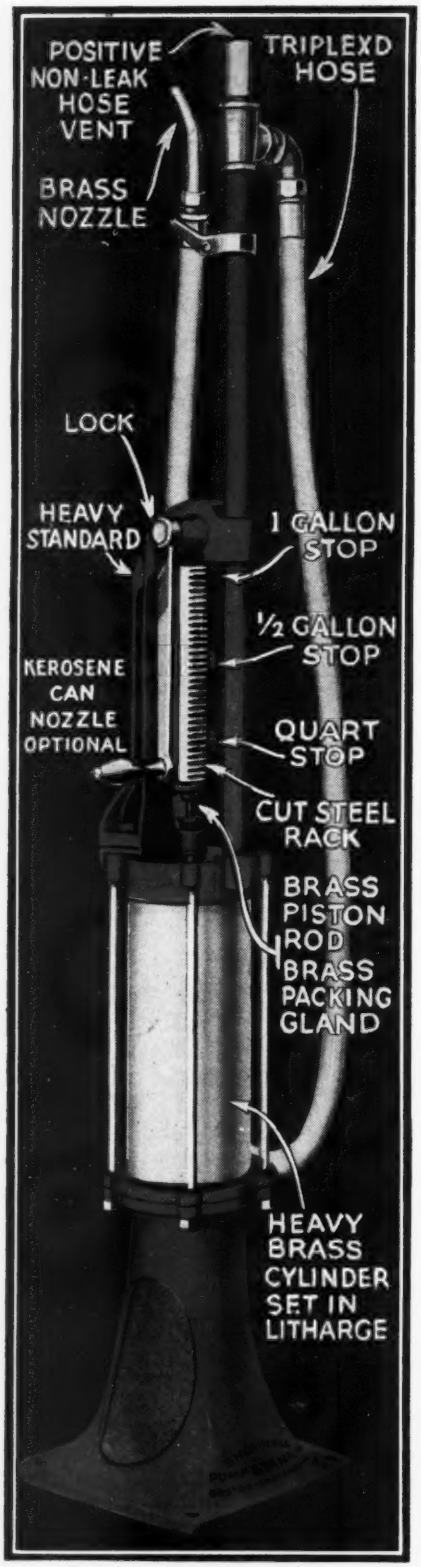
Get Big Gallonage with the Original Famous Shotwell

"LITTLE GIANT"

One-gallon Pumps for Gasoline, Oil or Kerosene

$24.75 In lots of 4

SPECIAL PRICE OFFER
Single Pump - - $26.00
With 200-gal. Tank and Fittings - - $48.00



Send for our complete catalog on Ball Bearing Pumps
All Prices f.o.b.

Shotwell Pump & Tank Co.
Boston **Indianapolis**

New Equipment to Improve Plants

Personal Notes of the Manufacturers

National Petroleum News

General Refractories Co., Philadelphia, has on the market what it calls Grefco, which is claimed to be a chrome base cement free of silicate of soda and other acid fluxes designed to prevent fluxing of refractory surfaces such as metal-melting and heating furnaces, boiler furnaces, electric furnaces, combustion chambers in oil, gas and powdered coal installations, etc.

Grefco is said to be very plastic and to lend itself to either dipped or troweled joints. Its softening point is between 3400 and 3500 Fahr. It prolongs the life of fire clay brick, the company claims.

* * *

J. E. Swindler, vice president of the Frick Reid Supply Co., Tulsa, visited the plant of the Joseph Reid Gas Engine Co., Oil City, Pa., recently for a few days. Mr. Swindler motored to Oil City, and was accompanied by Mrs. Swindler and son, Reid.

* * *

Keesee Manufacturing Co., 701 West Belgrave Ave., Los Angeles, has recently brought out a new gasoline pump, hand operated of the 1-gallon type, with a shipping weight of 80 pounds. The pump can be installed directly over the tank. Literature will be mailed upon request.

* * *

Paasche Airbrush Co., 1909 Diversey Parkway, Chicago, has placed on the market a new touch-up airbrush designed to meet various demands of decorators. It can be used to apply paint on automobiles, furniture, etc.

The company has just opened a sales and service branch at Cincinnati, O., of which H. H. Evers will be manager. A complete line of goods will be maintained at this branch.

* * *

The name of the Witt Steel Co., manufacturer of steel plate construction work, has been changed to the Witt-Humphrey Steel Co., Greensburg, Pa., and the capitalization of the company has been increased from $300,000 to $600,000. The change is one of name only.

The company has published a 36-page booklet on the prevention of corrosion for which it recommends its MetaLayer, a molten metal coating to be applied on cast iron, steel, wood, stone, etc. The sprayed metal adheres to the surface and protects it against corrosion.

Composition of MetaLayer, method of applying and its many other uses are described. It includes illustrations of oil storage tanks aluminum-sprayed, pipe line zinc-sprayed and various other industrial uses.

Charles V. Witt, president, presented a paper at the Central Water Works convention at Akron, O., on Sept. 15 and 16, on metal spraying process and its applications.

* * *

American Engineering Standards Committee, 29 West 39th St., New York City, has announced the completion of the first of a series of standards for pipe flanges and fittings, representing the results of several years of co-operative work by several industrial groups. Several years ago when the sectional committee began its work, a few steam power plants were using 350 and 400 pounds pressure. Pressures of 2000 and 3200 pounds per square inch will be added eventually with the increasing use of high pressure superheated steam.

* * *

International Derrick & Equipment Co., Columbus, O., has improved its bull hoist to have more power, positiveness and ease of control and elimination of fire hazard. It is built for heavy duty and has as its principal feature an air cooled, compensating brake drum made of grey iron casting.

A new product, the crank counterbalance designed for application to any standard rig, has just been placed on the market by the company. Simplicity of design and minimum number of parts are chief features of this apparatus.

Another new product the company has developed is a chain driven sand reel which is compact and claimed to give greater economy of operation, eliminate breakdowns, permit higher operating speeds and make the reel adaptable to all makes of equipment. It can lower a 6 inch bailer into the hole at a rate of 3000 feet per minute, and will lift the bailer as rapidly as the speed of the engine will permit, the company claims.

Timken tapered roller bearings and Idecalloy manganese steel sheaves have been incorporated into the new design "C" roller bearing crown block the International company has developed. The greatest possible capacity for radial loads, thrust and shock, have been built into these blocks. Economy of operation and continuous operation at high speeds are chief features.

OAK MOTOR OIL flows freely at 10° 20° 30° below Zero

When other oils are frozen to *this consistency*

OAK Motor Oil will flow through this opening

More Sales for Oil-Dealers this Winter!

MOST ZERO OILS stiffen to uselessness at many degrees above zero, and at 30° *below* zero, they are of axle-grease consistency. Yet at this temperature OAK Motor Oil flows freely through a 3/16" clearance, the clearance all oils must pass through in a motor, or the motor gets no lubrication.

OAK is positively unaffected by cold weather. For five years, OAK MOTOR OIL has passed the most severe freezing tests ever put to an oil, and is unanimously acclaimed by lubrication experts, the best winter oil ever developed.

There's a big winter business awaiting you if you sell OAK Motor Oil. Not only will your oil sales be bigger, and more satisfactory, but gas and accessory sales will mount also, for OAK keeps cars on the road all winter. It gives summer service at 30° below zero and thus eliminates the grief of winter driving.

Send coupon for full information about this 100% lubricant today.

FRONTIER MANUFACTURING COMPANY
DEPT. 7
North Tonawanda, New York

PLEASE send me full information about OAK, the only motor oil that will flow freely at 30° below zero.

*Name*_____

*Address*_____

OAK MOTOR OIL

"DEFIANCE"

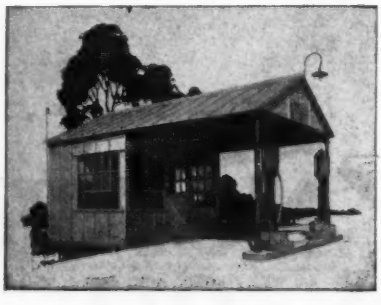
REPUTATION

The co-operation of hundreds of people towards making a better barrel, has produced results. Results make reputation.

Reputation is not created in a year, although it may be lost in a day.

Only incessant vigilance and fixed integrity during the past years, have earned for Defiance Steel Barrels the reputation they enjoy among shippers of petroleum products.

THE AMERICAN STEEL PACKAGE CO.
Defiance, Ohio



Artistic, Substantial Filling Stations

Made of galvanized steel. Patented interlocking joints make a weather-tight, strong building. Easily erected in a day. The only tools needed for erecting are hammer, pliers, and screw-driver.

Write for Catalog No. 7

Marion Machine, Foundry & Supply Co.
Box T 685, Marion, Ind.

New Patents

Aug. 30

REFINING

Process and Apparatus for Cracking Hydrocarbon Oils.—Warren F. Faragher and William Arthur Gruse, Pittsburgh, Pa., assignors to Gulf Refining Co., Pittsburgh, Pa. Filed Jan. 15, 1921. No. 1,640,444.

Distillation and Coking of Carbonaceous Materials.—Ludwig Honigmann, Bichlerhof, Bad Tolz, and Friedrich Bartling, Munich, Germany. Filed Jan. 7, 1927. No. 1,640,502.

Process of Purifying Hydrocarbons.—Leon W. Parsons, Cambridge, Mass., and Stewart P. Coleman, Corpus Christi, Tex., assignors to Standard Development Co., New York, N. Y. Filed Nov. 10, 1922. No. 1,640,720.

Art of Distilling Oils.—Frank A. Howard and Nathaniel E. Loomis, Elizabeth, N. J., assignors to Standard Development Co. Filed April 10, 1922. No. 1,640,938.

Roasting Furnace.—Henry J. Hartley, New York, N. Y.; Edward J. Fowler, Redwood City; and Dudley Baird, Berkeley, Calif., assignors to Nichols Copper Co., New York, N. Y. Filed July 21, 1926. No. 1,640,988.

Process of Distilling Oil in Presence of Comminuted Carbonaceous Fuel.—Walter Edwin Trent, Washington, D. C., assignor to Trent Process Corp., Washington, D. C. Filed Nov. 4, 1920. No. 1,641,305.

Refining Hydrocarbon Oils.—Paul McMichael, Flushing, N. Y., assignors to The Hydrocarbon Refinishing Process Co., Inc., New York, N. Y. Filed May 25, 1925. No. 1,641,546.

Condenser.—Ellsworth S. Bryant, Detroit, Mich. Filed Oct. 28, 1926. No. 1,641,660.

Process for Breaking Petroleum Emulsions.—Melvin De Groote, St. Louis, and Wilbur C. Adams, University City, Mo., assignors to Wm. S. Barnickel & Co., Webster Groves, Mo. Filed Aug. 11, 1926. No. 1,641,804.

Oil-Refining Apparatus.—Harley A. W. Howcott, New Orleans, La. Filed Feb. 7, 1924. No. 1,641,852.

Apparatus for Cracking Hydrocarbons.—John E. Bell, deceased, Brooklyn, N. Y., by Lola R. Bell, executrix, Brooklyn, N. Y., and Edward W. Isom, Locust Valley, N. Y., assignors to Sinclair Refining Co., New York, N. Y. Filed July 25, 1925. No. 1,641,941.

PRODUCTION

Reamer for Rotary Well Drills.—Leonard Aldrin, Denver, Colo. Filed Feb. 9, 1923. No. 1,640,341.

Standing-Valve Puller.—Roe C. Hawkins, Long Beach, Calif. Filed Oct. 23, 1926. No. 1,640,406.

Standing Valve.—John W. House, Corsicana, Tex. Filed May 20, 1926. No. 1,640,408.

Earth-Boring Tool.—Thomas C. Whisler, Redondo Beach, Calif. Filed May 28, 1925. No. 1,640,587.

Drilling Tool.—Steve Bullum, Fellows, Calif. Filed Dec. 15, 1922. No. 1,640,644.

Tubing Catcher.—Stephen V. Dillon, Tulsa, Okla. Filed Jan. 19, 1927. No. 1,640,756.

Fire Extinguisher for Oil and Gas Wells.—Edward A. Kliewer, Olden, Tex. Filed Jan. 17, 1921. No. 1,640,838.

Fire Extinguisher for Oil Wells.—Edward Albert Kliewer, Tulsa, Okla., assignor of twenty-four per cent to F. G. Lippitt, one thirty-second to J. W. Castleman, and one-sixteenth to Walter David, Breckenridge, Tex. Filed April 12, 1923. No. 1,640,839.

Multiple Sucker-Rod Socket.—Albert H. Neilson, Tulsa, Okla. Filed Aug. 31, 1925. No. 1,640,847.

Method of and Apparatus for Setting Pipe or Casing and Preventing Seepage and Leakage in Wells.—George Alfred Hero, New Orleans, La. Filed Oct. 14, 1924. No. 1,641,035.

NATURAL GASOLINE

Heat Exchanger.—Carl F. Braun, San Francisco, Calif. Filed March 14, 1922. No. 1,640,746.

Absorption Plant.—Carl F. Braun, Pasadena, Calif. Filed Feb. 7, 1923. No. 1,640,747.

Progressive Condenser.—Carl F. Braun, Pasadena, Calif. Filed Feb. 7, 1923. No. 1,640,748.

MISCELLANEOUS

Process and Apparatus for Cracking Hydrocarbon Oils.—Warren F. Faragher and William Arthur Gruse, Pittsburgh, Pa., assignors to Gulf Refining Co., Pittsburgh, Pa. Filed Jan. 15, 1921. No. 1,640,444.

Hydrocarbon Vaporizing Device for Starting Motors.—Thomas J. Little, Jr., Detroit, Mich., assignor to Lincoln Motor Co. Filed July 23, 1920. No. 1,640,902.

ON THE LAZY BENCH

National Petroleum News

Convincing Himself

Two backwoodsmen in Maine knocked at the door of a house at the edge of the forest. "Hello, Ed!" said one of them to the farmer who came to the door. "Say, we came across the dead body of a man over there in the hollow an' we kinda thought 'twas you."

"That so? What'd he look like?" asked the farmer.

"Well, he was about your build—"

"Have on a gray flannel shirt?"

"Yep."

"Boots?"

"Yep."

"Was they knee boots or hip boots?"

"Let's see. Which were they, Charley, knee boots or hip boots? Oh, yes they was hip boots."

"Nope," said the farmer. "It wasn't me."—*Flash Points.*

* * *

Whene'er I buy a modest block
Of what I think a Dandy Stock
And read "Stocks Soar in Record Day,"
My little stock appears this way:
.....—¼
But when the market is distraught,
When everything is overbought
And headlines say "All Stocks Decline"
What happens to that stock of mine?
.....—¼

* * *

Mrs. Newlywed (indignantly): "I've told you to keep out of the kitchen, Dick. Now look what you've done—knocked down my cookery book and lost my page, and I have not the faintest idea what I was cooking.

—*Union Oil Bulletin.*

* * *

Frank Lott had been relating some of his war experiences at the dinner table. His wife's little brother, Stanley, was quite interested. He finally asked his sister: "Sis, may I talk like a soldier?" She said: "Why, yes, if you want to."

He said: "Then damn it, shove that butter over here!"

—*Flash and Fire.*

* * *

Bride: "He's awful, mother. He doesn't believe in bridge, dancing or any amusement."

Mother: "But you must remember, dear, you took him for better or worse."

Bride: "Yes, but it would be so much better if he were worse."

—*Union Oil Bulletin.*

Overheard at Portsmouth Office:

Lloyd: "I have the darndest time finding things around this office. Means, have you see my hat?"

Means: "You have it on your head, Lloyd."

Lloyd: "Thanks. If it hadn't been for you, I would have gone without it."—*Flash and Fire.*

* * *

He (absent-mindedly): "You're a dear, sweet girl, Anna."

She: "Why, Harry, my name is Sue."

He (recovering): "I say, you're a dear, sweet girl, an'na love you with all my heart."—*Skelly News.*

* * *

We have a truck salesman here who has a habit of forgetting. The other day he met one of his old friends down the street and had a long chat. When he was about to leave, he suddenly assumed a puzzled expression. "Tom," he said, "Was I going up or down the street when I met you?" "Down," replied Tom. "Well, it's all right then, I guess I've been home to lunch,"—*Flash and Fire.*

* * *

"Could I interest you in this lightning pocket calculator?" inquired the gentlemanly salesman.

"Nothing doing!" exclaimed the weary commuter. "My wife attends to that job every night."

—*Skelly News.*

* * *

Ker-choo!

Cop: "Hey, you!"

Back Seat: "Drive on. It's only a policeman with hay fever."

—*Power Specialist.*

* * *

Or a Glass Eye

A sign over a garage in a small western town reads:

Use genuine parts. No substitutes are as good. Ask the man with a wooden leg. HE KNOWS.

—*Flash Points.*

* * *

Dorothy: "But, surely, you didn't tell him straight out that you loved him?"

Jane: "Goodness, no. He simply had to squeeze it out of me."

—*Skelly News.*

* * *

First Dog: "How'd you lose your tail? Too much waggin'?"

Second Dog: "No, too much automobile."—*Flash and Fire.*

Box Type Cases

Attractive and serviceable cases of black cobra grain Keratol and lined with red velveteen. Comfortable handle. Plain bottles in separate compartments.

No. 260—Contains twelve 2-oz. long bottles and five ¼-oz. tall grease jars..... **$3.20**

No. 261—Contains six 4-oz. bottles and five ½-oz. grease jars..... **$3.55**

No. 262—Contains seven 4-oz. bottles and five grease jars..... **$3.20**

No. 263—Contains nine 4-oz. bottles and four ½-oz. grease jars..... **$4.25**

10% discount for Cash

Other Styles in our FREE Catalog

L-U-C-E

Builders of Sales Luggage

614 Delaware Kansas City, Mo.

Store gasoline in crude tanks without discoloration

YOU can! If the crude tanks are first cleaned with Oakite materials and methods.

Oakite cleaning removes all sludge, oil, bituminous deposits, and dirt, completely from the interior of storage tanks. In fact, Oakite cleans so thoroughly that gasoline can be stored in crude tanks—*without loss of a color point.* What is more, Oakite cleans at lower cost than any other material available. *And Without Fire Hazard!*

Have an Oakite Service Man give you the facts. Write us. No obligation.

Oakite Service Men, cleaning specialists, are located in the leading industrial centers of the U. S. and Canada

Oakite is manufactured only by

OAKITE PRODUCTS, INC.
42C Thames St., New York, N.Y.

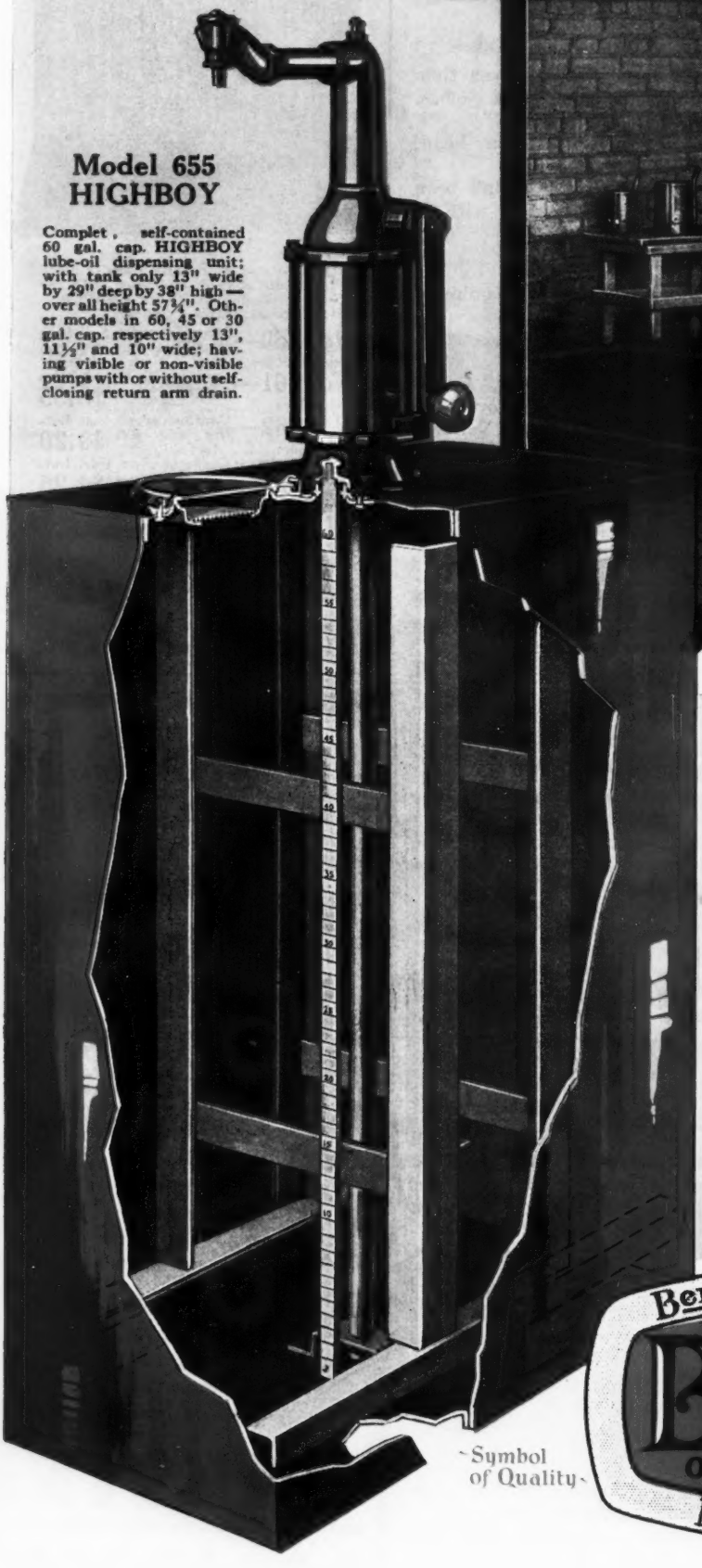
(Formerly Oakley Chemical Co.)

OAKITE

Industrial Cleaning Materials and Methods

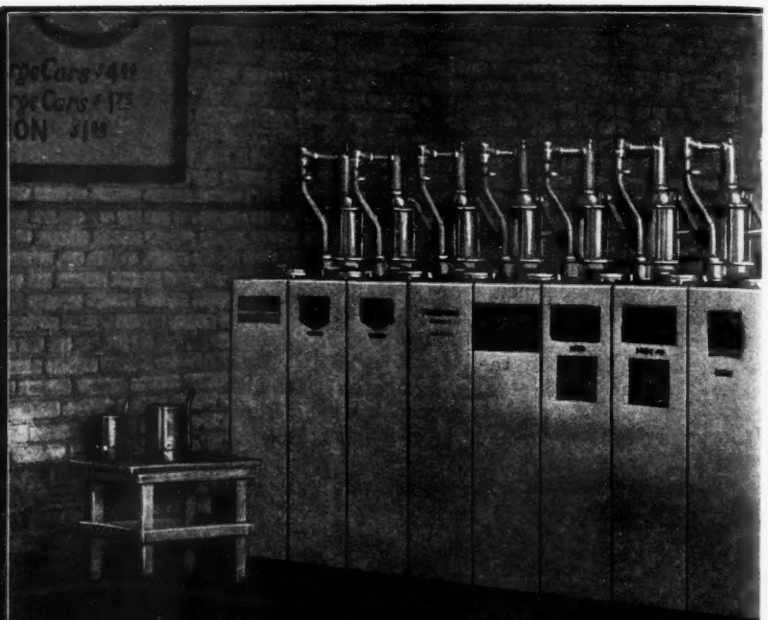
Model 656 HIGHBOY

standard 60 gal. capacity HIGHBOY units with non-visible pumps and self-closing return drain arms, one of several HIGHBOY batteries on duty at the "SAFETY CORNER" of Wm. Ellenbeck, Hollywood, Calif. Note that tanks do not bulge; align perfectly; and are spotlessly clean. 1080 gal. are stored on a 19½ ft. front.



Model 655 HIGHBOY

Complet , self-contained 60 gal. cap. HIGHBOY lube-oil dispensing unit; with tank only 13" wide by 29" deep by 38" high — over all height 57¾". Other models in 60, 45 or 30 gal. cap. respectively 13", 11½" and 10" wide; having visible or non-visible pumps with or without self-closing return arm drain.



One of Several HIGH-BOY Batteries at the "SAFETY CORNER" of Wm. Ellenbeck, Hollywood, Calif.

Super-

MULTIPLE - TRUSS CONSTRUCTION

One of the many HIGHBOY structural superiorities obtainable in no other equipment. Obviously this 10-member, unified internal bracing is costly construction — but it makes possible our guarantee against bulging and assures accurate gauging of tank contents.

Other exclusive features including the metal gauge stick with water-sealing, hooded handle and recessed opening for draining oil off gauge stick back into tank. Gauge stick is mounted outside fill opening — readable at all times. Note the heavy cast steel lockable fill-opening cover; and wide screened area of removable fill opening assembly. Riser pipe rests on strong U-support — another specific HIGHBOY feature.

Write for
HIGHBOY BULLETIN

Bennett Pumps Corporation
QUALITY BUILT
Bennett
Oil and Grease Equipment
Muskegon, Michigan.

Symbol of Quality

Refinery - Tank Wagon Markets

National Petroleum News

Export Buying of Kerosene and Light Gasolines Active in Mid-Continent

Staff Special
TULSA, Oct. 1

EXPORT buying of both high-gravity gasolines and kerosenes, along with a good domestic demand, made these commodities the most active in the Mid-Continent refinery market this week. Low gravity gasolines, natural gasolines and heavy oils were steady.

Approximately 500,000 gallons of 41-43 water white kerosene were bought late this week by the Atlantic Refining Co. from Oklahoma and Texas refiners at around 4.25 cents a gallon. Indications were the buyers virtually combed the two fields for the goods. Refiners in Texas report they are well sold up on kerosenes and buyers who seek prompt shipment goods, are having to pay up to 4.50 cents a gallon.

Considerable domestic buying of kerosene has been done in Oklahoma the last two weeks by both jobbers, and refiners that do not make sufficient kerosene to supply their trade. The result has been an advance in price with the product reported scarcer. One refiner reported today there was a sizable inquiry for kerosene for shipment over several weeks. Several refiners late in the week advanced their price to 4.50 cents for 41-43 w.w. Some of the few that are making 42-44 w.w. advanced their quotations to 5 cents.

Refiners in north Louisiana report little kerosene is available on the spot market. Arkansas refiners are having no trouble moving their output.

Early in the week the Atlantic Refining Co. also bought a quantity of 64-66, 375 e.p. gasoline in north Texas, the price reported at 6.75 cents. Reports were the Atlantic would have taken more gasoline at this price if it could have been found, but that refiners had plenty of orders and had advanced their quotations to 6.875 to 7.25 cents.

While the export demand was sufficient to take care of north Texas refiners, Oklahoma refiners that are making higher gravity goods, found domestic demand heavy all week. Prices on grades lighter than U. S. Motor gasoline, therefore, were more strongly entrenched at their present levels than other gasolines.

Reports from the Standard Oil Co. of Indiana territory indicate weather has not been favorable for heavy consumption of 58-60 U. S. Motor gasoline and lower grades, and the slowing up in demand has been felt somewhat in the refinery districts. Several inquiries were in the field late in the week, however, for quotations for over October, and reports were a majority of refiners were inclined to quote the spot market.

Despite the slowing up in spot demand for U. S. Motor gasoline, many refiners had enjoyed a good business earlier in the month, and had sufficient old orders on their books not to feel the necessity of pushing goods this week.

The strength of the lighter gasolines in Texas has been reflected in price of U. S. Motor gasoline there. While some goods are moving at 6.125 cents in Oklahoma, buyers say they cannot get any spot goods in Texas at under 6.25 cents. Refiners apparently are standing pat on that price since a relatively small amount is made there at present and they can almost afford to ask their own price.

BUYING of natural gasolines was not so active the last week of September, but manufacturers were well supplied with orders previously placed and no distress goods appeared.

Beginning today natural gasolines, to meet revised specifications of the Association of Natural Gasoline Manufacturers, must pass the corrosion test. It was erroneously stated in an article in the Sept. 14 issue of NATIONAL PETROLEUM NEWS that the revision called for goods to pass doctor test.

Several large buyers apparently have been reluctant to enter the market for October requirements until they could get some indication of the effect the revision in specifications would have on prices. Several manufacturers said today, however, that their current contracts have been renewed sufficiently already to indicate a good month for them.

DISTILLATES have shown no changes in prices. Low flash, low cold test straw color 38-40 distillate is moving mostly at 3.25 cents a gallon, while goods of higher flash are bringing around 3.125 cents. The 36-38 straw distillate is pegged at 3 cents, with an occasional car at prices slightly above or below this figure. Refiners say they do not look for an active distillate market until the northern states experience at least one more cold snap, which will give the jobbers an opportunity to begin drawing on stocks already in storage.

Low cold test gas oils have been in better demand in Texas, and with local demand also good, the commodity has been comparatively scarce the last two or three weeks. The bulk of sales was bringing 2.625 cents a gallon, with an occasional sale of zero cold test goods at 2.75 cents.

Little zero straw color gas oil is being offered in Oklahoma. Prices of other grades of gas oil have been around 2.50 to 2.625 cents. One or two refiners said this week, however, that they would begin to make zero gas oil in the near future and probably would ask a premium over the ordinary grade.

Fuel oils have shown no change either in price or demand in Oklahoma. Inquiries were more numerous from industrial buyers for goods for over October shipments, but the prevailing quotations were at market levels.

Oklahoma neutral oils and cylinder stocks continued to move in good shape, refiners making them reported, and prices have been unchanged.

Wax also was in good demand with two or three refiners reporting they already are sold up for October. Prices were holding around 2.75 to 3 cents a pound.

"From Mine to Market"

CAPTAIN of Transportation—this staunch, soundly constructed Wheeling Steel Drum! Built for efficient performance. Enjoys a reputation for getting goods to "port" and *on time*. Endorsed by business houses everywhere because it saves money and *insures* the satisfaction of consignee. There is a style and type of Wheeling Steel Drum to meet practically every shipping requirement. Send for illustrated catalog.

WHEELING STEEL CORPORATION, WHEELING, W. VA.

WHEELING
STEEL DRUMS

Refinery Markets on Light Oils and Lubricants

Prices given below are in cents per gallon, F. O. B. refinery, except where $ is shown

(These Refinery Prices compiled in the OIL PRICE HANDBOOK for a whole year)

GASOLINE AND NAPHTHA

PENNSYLVANIA	Prices Oct. 3	Prices Sept. 26	Prices Sept. 19
52-54 Naphtha	8.25 – 8.50	8.25 – 9.00	8.25 – 8.50
54-56 Naphtha	8.25 – 8.50	8.25 – 9.00	8.25 – 8.625
58-60 Gasoline	8.00 – 8.375	8.25 – 8.75	8.00 – 8.50
60-62 Str.-run gasoline	8.75 – 9.00	9.00 – 9.25	8.75 – 9.25
64-66 Str.-run gasoline	9.25 – 9.75	9.50 – 9.75	9.50 –10.00
68-70 Str-run gas. 350-360 e.p.	9.75 –10.25	9.75 –10.50	10.00 –10.50
OKLAHOMA			
48-50 450 e.p. naphtha	6.00	6.00	6.00
50-52 450 e.p. naphtha	6.00	6.00	6.00
56-58 450 e.p. gasoline	6.00	6.00	6.00
58-60 450 e.p. gasoline	6.00 – 6.125	6.00	6.00
56-58 U. S. Motor, 437 e.p.	**6.125	**6.125	*6.00 – 6.125
58-60 U. S. Motor, 437 e.p.	6.125– 6.50	6.125– 6.50	6.125– 6.25
60-62 437 e.p. gasoline	**6.25 – 6.75	**6.25 – 6.75	**6.25 – 6.75
60-62 400 e.p. gasoline	**6.50 – 7.00	**6.50 – 7.00	**6.50 – 7.00
64-66 390 e.p. gasoline	**6.875– 7.00	**6.875– 7.00	**6.50 – 7.00
64-66 375 e.p. gasoline	**7.00 – 7.25	**7.00 – 7.25	**6.75 – 7.25
68-70 350-360 e.p. gasoline	*7.50	*7.25 – 7.50	**7.00 – 7.50
KANSAS* (F. O. B. refinery Kansas destination)			
58-60 U. S. Motor 437 e.p.	6.50	6.50	6.375– 6.50
60-62 400 e.p. gasoline	7.00	7.00	6.75 – 7.00
64-66 375 e.p. gasoline	7.25 – 7.50	7.25 – 7.50	7.25
NORTH TEXAS			
48-52 450 e.p. naphtha	†6.00	†6.00	†6.00
56-58 450 e.p. gasoline	5.875	5.75 – 5.875	5.75
58-60 450 e.p. gasoline	5.875– 6.125	5.875– 6.00	5.75
58-60 U. S. Motor 437 e.p.	6.25	6.125– 6.25	6.125
60-62 400 e.p. gasoline	6.625	6.50 – 6.625	6.375
64-66 390 e.p. gasoline	6.75	6.75	6.375– 6.50
64-66 375 e.p. gasoline	6.875– 7.00	6.875– 7.00	6.50 – 6.75
68-70 350-360 e.p. gasoline	7.25 – 7.375	*7.25	*7.00 – 7.25
NORTH LOUISIANA (For Louisiana and differential territory destination)			
58-60 U. S. Motor gasoline	6.50	6.50	6.375– 6.50
ARKANSAS (For Arkansas intrastate shipment)			
56-58 450 e.p. gasoline	6.25	6.25	6.25
58-60 450 e.p. gasoline	6.25	6.25	6.25
58-60 U. S. Motor 437 e.p.	6.375– 6.625	6.375– 6.625	6.25 – 6.50
ARKANSAS (F. O. B. Arkansas refineries for interstate shipment)			
58-60 U. S. Motor 437 e.p.	**6.25 – 6.50	**6.25 – 6.50	**6.00 – 6.50
CALIFORNIA			
•54-58 U.S. Motor 437 e.p.	7.25 – 8.50	7.25 – 8.50	7.25 – 8.50
•58-61 U.S. Motor 437 e.p.	8.50 – 9.50	8.50 – 9.50	8.50 – 9.50
•42-45 Eng. dis. 445-480 e.p.	6.50 . 7.00	6.50 – 7.00	6.50 – 7.00

•2c tax to be added if used in state.

NEW ENGLAND

"These prices have been discontinued in this table and will appear hereafter in the Seaboard market for Boston."

NATURAL GASOLINE

(Note: End point of all grades, not over 375° F. Since Oct. 1, 1927 all naturals must pass corrosion test.)

OKLAHOMA			
Grade AA, 80-87.9, 90% Recovery	6.00	†6.125– 6.25	6.00 – 6.25
Grade A, 72-79.9, 90% Recovery	6.00	†6.125– 6.25	6.00 – 6.25
Grade BB, 84-92, 85% Recovery	5.50 – 5.625	†5.75	5.625– 5.75
Grade B, 76-83.9, 85% Recovery	5.50 – 5.625	†5.75	5.625– 5.75
Grade C, 80-90, 78% Recovery	5.50	†5.625– 5.75	5.625
NORTH TEXAS (F. O. B. Breckenridge)			
Grade AA, 80-87.9, 90% Recovery	6.00 – 6.125	†6.125– 6.25	6.00 – 6.25
Grade A, 72-79.9, 90% Recovery	6.00 – 6.125	†6.125– 6.25	6.00 – 6.25
Grade BB, 84-92, 85% Recovery	5.625	†5.75	5.625– 5.75
Grade B, 76-83.9, 85% Recovery	5.625	†5.75	5.625– 5.75
Grade C, 80-90, 78% Recovery	5.50 – 5.625	†5.625– 5.75	5.625
NORTH LOUISIANA (F. O. B. Monroe District)			
Grade AA	†6.25 – 6.375	†6.25 – 6.375	†6.25
Grade BB	†6.00	†6.00	†6.00
Grade C	†6.00	†6.00	†6.00
CALIFORNIA			
75-85, 375-390 e.p. blend	8.00 –10.00	8.00 –10.00	8.00 –10.00

MOTOR FUEL BLENDS

PENNSYLVANIA			
68-70 Blend 437 e.p.	Prices	.....	.....
64-66 Blend 437 e.p.	temporarily	.....	.....
60-62 Blend 437 e.p.	discontinued	.....	.....
OKLAHOMA			
64-66 Blend 437 e.p.	6.125– 6.25	6.125– 6.25	5.75 – 5.875

BURNING OILS

PENNSYLVANIA			
45 w.w. kerosene	6.50 – 6.75	6.00 – 6.50	6.125– 6.25
46 w.w. kerosene	7.00 – 7.125	6.50 – 7.00	6.50 – 6.625
47 w.w. kerosene	7.25	6.875– 7.25	7.00 – 7.25
OKLAHOMA			
41-43 w.w. kerosene	4.50	4.25 – 4.375	4.25 – 4.375
42-44 w.w. kerosene	*5.00	4.75	4.75
KANSAS (F. O. B. refinery Kansas destination)			
41-43 w.w. kerosene	4.75 – 5.25	4.75 – 5.25	4.75 – 5.25
42-44 w.w. kerosene	5.50 – 5.75	5.50 – 5.75	5.50 – 5.75
NORTH TEXAS			
40-42 w.w. kerosene	†4.25	†4.125– 4.25	†4.00
41-43 w.w. kerosene	4.375– 4.50	4.25 – 4.375	4.125– 4.25
NORTH LOUISIANA (For Louisiana and differential territory destination)			
41-43 w.w. kerosene	4.50 – 4.625	4.375– 4.625	4.50
ARKANSAS (For intrastate shipment only)			
42-44 kerosene	5.00	4.75	4.75
ARKANSAS (F. O. B. Arkansas refineries for interstate shipment)			
42-44 kerosene	4.75 – 5.00	4.50 – 4.75	4.50 – 4.75
CALIFORNIA			
38-40 w.w. kerosene	5.00 – 5.50	5.00 – 5.50	5.00 – 5.50
NEW ENGLAND			

"These prices have been discontinued in this table and will appear hereafter in the Seaboard market for Boston."

NEUTRAL OIL

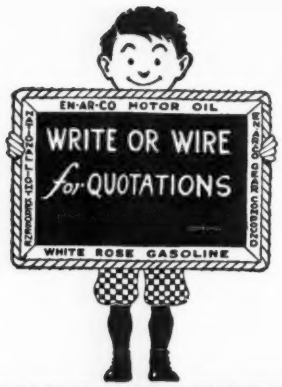
PENNSYLVANIA Vis.			
	(Viscosity at 70°F.)		
200 No. 3 Assoc. Filt.	34.00 –34.50	34.00 –35.00	34.50 –35.50
180 No. 3 Assoc. Filt.	32.00 –32.50	31.00 –32.50	31.75 –32.50
150 No. 3 Assoc. Filt.	27.50 –28.00	26.50 –28.00	27.75 –28.50
	(Non Viscous)		
34 Grav. 330-340 Flash	7.25 – 7.75	7.00 – 8.00	7.00 – 7.50
36 Min. Neut. 300-305 Flash	7.00 – 7.50	6.50 – 7.50	6.50 – 7.00
**OKLAHOMA Vis. Color	(Viscosity at 100°F.)		
100—No. 2	6.00 – 6.50	6.00 – 6.50	6.00 – 6.50
150—No. 3	8.25 – 8.50	8.25 – 8.50	8.25 – 8.50
150—No. 4	8.00 – 8.50	8.00 – 8.50	8.00 – 8.50
180—No. 3	9.50 –10.00	9.50 –10.00	9.50 –10.00
180—No. 4	9.50 – 9.75	9.50 – 9.75	9.50 – 9.75
180—No. 5	9.25 – 9.75	9.25 – 9.75	9.25 – 9.75
200—No. 3	9.50 –11.00	9.50 –11.00	9.50 –11.00
200—No. 4	9.50 –10.75	9.50 –10.75	9.50 –10.75
200—No. 5	8.50 –10.50	8.50 –10.50	8.50 –10.50
220—No. 3	12.50 –13.50	12.50 –13.50	12.50 –13.50
220—No. 4	12.25 –12.50	12.25 –12.50	12.25 –12.50
220—No. 5	11.50 –12.00	11.50 –12.00	11.50 –12.00
240—No. 3	14.00	14.00	14.00
240—No. 4	13.50	13.50	13.50
240—No. 5	12.00 –13.00	12.00 –13.00	12.00 –13.00
280—No. 3	16.00 –17.00	16.00 –17.00	16.00 –17.00
280—No. 4	15.25	15.25	15.25
280—No. 5	14.00 –15.00	14.00 –15.00	14.00 –15.00
300—No. 5-6	17.00	17.00	17.00
GULF COASTAL Vis. Color	(Viscosity at 100° F., pour test 0)		
100—No. 2 Unfilt. Pale	7.00 – 7.50	7.00 – 7.50	7.00 – 7.50
200—No. 3 Unfilt. Pale	9.50 –10.00	9.50 –10.00	9.50 –10.00
300—No. 3 Unfilt. Pale	10.50 –11.50	10.50 –11.50	10.50 –11.50
500—No. 3½ Unfilt. Pale	12.50 –13.00	12.50 –13.00	12.50 –13.00
750—No. 4 Unfilt. Pale	15.00 –15.50	15.00 –15.50	15.50 –16.00
200—No. 5½ Red Oil	8.00 – 8.50	8.00 – 8.50	8.00 – 8.50
300—No. 5½ Red Oil	9.50 –10.00	9.50 –10.00	9.50 –10.00
500—No. 6 Red Oil	10.50 –11.50	10.50 –11.50	10.50 –11.50
750—No. 6 Red Oil	13.50 –14.00	13.50 –14.00	13.50 –14.00
CALIFORNIA Vis. Color	(Viscosity at 100°F.)		
100—No. 2	9.00 – 9.50	9.00 – 9.50	9.00 – 9.50
100—No. 3	7.50 – 8.00	7.50 – 8.00	7.50 – 8.00
200—No. 3	9.50 –10.00	9.50 –10.00	9.50 –10.00
300—No. 3	10.50 –11.00	10.50 –11.00	10.50 –11.00
450—No. 3-3½	13.00 –13.50	13.00 –13.50	13.00 –13.50
550—No. 3-3½	14.50 –15.00	14.50 –15.00	14.50 –15.00
600—No. 3-3½	15.00 –15.50	15.00 –15.50	15.00 –15.50
100—No. 5	6.50	6.50	6.50
200—No. 5	8.00 – 8.50	8.00 – 8.50	8.00 – 8.50
300—No. 5	9.00 – 9.50	9.00 – 9.50	9.00 – 9.50
400—No. 5	11.00 –11.50	11.00 –11.50	11.00 –11.50
500—No. 5	11.00 –11.50	11.00 –11.50	11.00 –11.50
600—No. 5	12.00 –12.50	12.00 –12.50	12.00 –12.50
700—No. 7	14.00 –14.50	14.00 –14.50	14.00 –14.50

CYLINDER STOCKS

**OKLAHOMA			
190-200 Vis. at 210° Brt. St.	31.00 –32.00	31.00 –32.00	31.00 –32.00
150-160 Vis. at 210° Brt. St.	25.00 –27.00	25.00 –27.00	25.00 –27.00
600 E St. 140-150 Vis.-210°	17.00 –18.00	17.00 –18.00	17.00 –18.00
600 St. Ref. Olive Green	9.00 –10.00	9.00 –10.00	9.00 –10.00
600 St. Ref. Dark Green	7.00 – 8.00	7.00 – 8.00	7.00 – 8.00
Black Oil	5.00	5.00	5.00
PENNSYLVANIA	(1-inch Immersion Test)		
600 Steam Refined	10.00 –10.25	9.50 –10.25	9.00 –10.00
650 Steam Refined	12.00 –12.50	12.00 –12.50	11.50 –12.50
600 Flash	16.50 –17.50	16.50 –17.50	16.50 –17.50
625 Flash	27.50 –28.50	27.50 –28.50	27.00 –28.00
600 Warren E	18.00 –19.00	18.00 –19.00	18.00 –19.00
600 Oil City E	17.00	17.00	17.00 –17.50
600 D Filtered	25.50 –26.00	25.50 –26.00	25.50 –26.00
Cold Test Stocks (brt. filt.)	34.00 –34.50	34.00 –34.50	34.50 –35.50
Cold Test Stock (dark filt.)	31.50 –32.50	31.50 –32.50	33.00 –34.00

(Note—Prices of total immersion test goods average 1 to 3 cents per gallon higher)

†PRICES NOMINAL ††ONLY ONE REFINER QUOTING •QUOTATIONS ONLY **REPRESENTS BOTH SALES AND QUOTATIONS



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PETROLEUM PRODUCTS

THREE MODERN REFINERIES:

Marietta, Ohio Refinery
operated on Pennsylvania Crude

Findlay, Ohio Refinery
operated on Ohio Crude

Coffeyville, Kansas Refinery
operated on Midcontinent Crude

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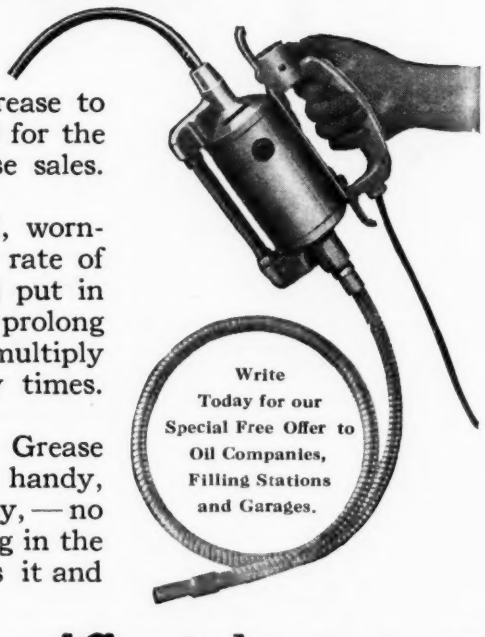
Warren Electric Grease Extractor

Positively Guaranteed to Triple Your Sales of Grease

STOP adding new grease to old grease. That is bad for the car, bad for your grease sales. Everybody loses.

Clean out all the old, worn-out, dirty grease at the rate of two lbs. per minute and put in new fresh grease. You prolong the life of the car, and multiply your grease sales many times. Everybody wins—big.

The Warren Electric Grease Extractor, light weight, handy, makes the job easy,—no flushing,—leaves nothing in the case. One man operates it and *likes* to use it.



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The Warren Refining and Chemical Co., Cleveland, O.

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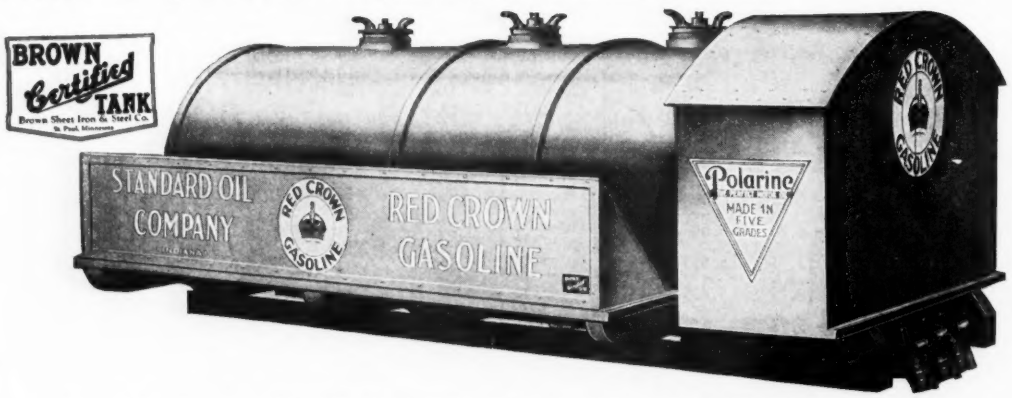
First—Over 15 years of practical experience in building.
Second—Guaranteed Thickness Material of proper analysis.
Third—Correct design to handle the load.
Fourth—They are built the right way not the cheapest way.



Through many years of experience in building oil equipment, we know your problems in every detail.

Our exceptional manufacturing facilities enable us to give the best kind of service.

A specially constructed tank built according to the purchaser's specifications.
The Standard Oil Company have several hundred of these in service.

BROWN SHEET IRON & STEEL CO. **ST. PAUL, MINN.**

— — — — — — — *Tear out this coupon and mail it to-day* — — — — — — —

We are interested in your tanks. Send your catalog and prices.

Make of Truck..... Year..... We operate..... (number) Tank Trucks.

Other equipment on which you may send prices.....

Name..... Address.....

Refinery Markets on Wax and Heavy Oil Products

Prices given below are in cents per gallon, F. O. B. refinery, except where $ is shown

(For quick reference to Refinery prices, get the OIL PRICE HANDBOOK, published annually)

WAX

PENNSYLVANIA Per Pound, New York	Prices Oct. 3	Prices Sept. 26	Prices Sept. 19
122-124 white crude scale.	3.125– 3.25	3.125	3.00 – 3.125
124-126 white crude scale.	3.125– 3.25	3.125– 3.25	3.00 – 3.125
OKLAHOMA			
**124-126 Semi-refined...	2.75 – 3.00	2.75 – 3.00	2.75 – 3.00
CALIFORNIA			
White crude scale, per pound.....	6.00 – 7.00	6.00 – 7.00	6.00 – 7.00

FUEL OIL

PENNSYLVANIA			
36-40 fuel oil.	4.75	4.625– 4.75	4.50 – 4.75
30-34 fuel oil.....	4.50 – 4.625	4.50 – 4.625	4.50 – 4.75
28-32 fuel oil.....	4.50 – 4.625	4.50 – 4.625	4.50 – 4.75
OKLAHOMA			
38-40 straw distillate.....	3.125– 3.25	3.125– 3.25	3.125– 3.25
36-38 straw distillate.....	3.00	3.00	3.00
32-36 gas oil, cracked....	2.50 – 2.625	2.50 – 2.625	2.50 – 2.625
32-36 gas oil, str. reduced.	2.50 – 2.625	2.50 – 2.625	2.50 – 2.625
28-30 fuel oil (in bbls.)..	$0.95 –$1.00	$0.95 –$1.00	$0.95 – 1.00
26-28 fuel oil (in bbls.)..	$0.90 – 0.95	$0.90 –$0.95	$0.90 – 0.95
24-26 fuel oil (in bbls.)..	**$0.85– 0.875	**$0.85–$0.875	**$0.85– 0.875
22-26 fuel oil (in obls.)..	**$0.825– 0.85	**$0.825–$0.85	**$0.825– 0.85
18-22 fuel oil (in bbls.)..	**$0.775–0.825	**$0.775–$0.825	**$0.775–0.825
16-18 fuel oil (in bbls.)..	**$0.75– 0.775	**$0.75–$0.80	**$0.75– 0.80
14-16 fuel oil (in bbls.)..	**$0.75– 0.775	**$0.75–$0.80	**$0.75– 0.80
KANSAS (F. O. B. refinery Kansas destination.)			
38-40 straw distillate.....	3.50 – 3.75	3.50 – 3.75	3.50 – 3.75
36-38 straw distillate.....	3.25 – 3.50	3.25 – 3.50	3.25 – 3.50
32-36 gas oil.....	2.75 – 2.875	2.75 – 2.875	2.75 – 2.875
24-26 gas oil.....	*$0.95– 1.05	*$0.95 –$1.05	*$0.95– 1.05
18-22 fuel oil.....	*$0.85– 0.90	*$0.85 –$0.90	*$0.85– 0.90
NORTH TEXAS			
38-40 straw distillate.....	3.125– 3.25	3.00 – 3.125	3.00
32-36 gas oil, cracked....	2.625	2.50 – 2.625	2.50
32-36 gas oil, uncracked..	2.625	2.50 – 2.625	2.50
24-26 fuel oil (in bbls.)...	$0.875	$0.85	$0.80 – 0.825

GULF COASTAL	Prices Oct. 3	Prices Sept. 26	Prices Sept. 19
Fuel (in bbls.).....	$1.60 –$1.65	$1.60 –$1.65	$1.60 –$1.65
Gas oil.....	4.00 – 4.25	4.00 – 4.25	4.00 – 4.25
NORTH LOUISIANA (For Louisiana and differential territory destination)			
32-36 gas oil, dark.....	3.00 – 3.25	3.00 – 3.25	3.00 – 3.125
32-36 gas oil, straw.....	3.00 – 3.25	3.00 – 3.25	3.00 – 3.125
16-20 fuel oil (in bbls.)...	$1.10 – 1.15	$1.10 –$1.15	$1.10 – 1.125
ARKANSAS (For Arkansas intrastate shipment only)			
32-36 gas oil.....	3.25 – 3.375	3.25 – 3.375	3.25 – 3.375
28-32 gas oil.....	3.00 – 3.25	3.00 – 3.25	3.00 – 3.25
Road oil	$1.25 – 1.30	$1.25 – 1.30	$1.25 – 1.30
ARKANSAS (F. O. B. Arkansas refineries for interstate shipment)			
28-32 gas oil.....	2.75 – 3.00	2.75 – 3.00	2.75 – 3.00
Smackover crude fuel....	$1.10 – 1.15	$1.10 – 1.15	$1.10 – 1.15
Road oil.....	$1.15 – 1.25	$1.15 – 1.25	$1.15 – 1.25
CALIFORNIA (F. O. B. San Joaquin Valley. At San Francisco, 4c per bbl. more)			
14-18 fuel oil (in bbls.)...	$0.65 –$0.90	$0.65 –$0.90	$0.65 –$0.90
14-18 Bunker oil (in bbls.)	$0.85 –$1.00	$0.85 –$1.00	$0.85 –$1.00
30-34 gas oil (in bbls.) ...	$0.90 –$1.00	$0.90 –$1.00	$0.90 –$1.00
27 Plus Diesel oil (in bbls.)	$0.85 –$1.00	$0.85 –$1.00	$0.85 –$1.00
NEW ENGLAND			

These prices have been discontinued in this table and will appear hereafter in the Seaboard market for Boston.

PETROLATUMS

PENNSYLVANIA (In cents per pound in tank cars; in barrels, in car lots ¾c per pound more.)			
Snow White.....	9.25	8.50	8.50
Lily White.....	8.25	7.50	7.50
Cream White.	7.25	6.50	6.50
Light Amber.....	5.50	4.00	4.00
Amber.....	4.50	3.75	3.75
Red.....	3.75	3.125	3.125
Green No. 5 color.....	3.50	2.50	2.50

**PETROLEUM COKE

(Per ton in car lots)

Lump.....	$5	$5	$5
Still run.....	$3	$3	$3
Breeze.....	$2	$2	$2

† Prices Nominal. †† Only one refiner quoting. * Quotations only. ** Represents both sales and quotations.

S. O. Ohio Adjusts Prices And Clears Market

CLEVELAND, Oct. 3.—Reduction of 2 cents a gallon in the posted tank wagon and service station prices of gasoline by the Standard Oil Co. of Ohio Oct. 1 seems to have done a great deal toward clarifying the gasoline market in this state. The Standard, in posting the reduction, discontinued the Q.D.A. and sale of coupon books at a discount of 2 cents a gallon. Standard called the reduction an adjustment.

Roxana Petroleum Corp., Sinclair Refining Co. and other companies that had been selling at 2 cents under the Standard's posted price held to their recent prices of 17 cents tank wagon and 19 cents service station, including tax of 3 cents. This is the first time in three or four years that Roxana and Standard have had the same posted prices. Standard's price is 19 cents at its bulk storage or railroad stations, as well as at its stations which are supplied by tank truck deliveries.

Some of the bulk stations that had been selling at 18 cents did not lower their prices, nor did many low price stations that have been selling six gallons for $1 or 99 cents.

The Standard's last previous change, except to cover an increase of 1 cent in the Ohio tax May 25, was a reduction of 2 cents a gallon April 20 when it also eliminated the coupon books at a little more than $9 for a $10 book and the 2-cent differential it had between its bulk storage or railroad stations and its regular stations. On June 18 it resumed the sale of $10 coupon books at $9.05 and reduced the price at its railroad stations 2 cents to 19 cents, including the 3-cent tax.

The Oct. 1 adjustment is like that of April 20 which lasted two months but was ended when price cutting increased and several small price wars developed.

Wallace E. Pratt, land and geological director of Humble Oil & Refining Co., Houston, is back at his desk after a vacation spent on his west Texas ranch.

Oil Price Handbook

RECENT crude and tankwagon price changes have caused many an oil man to study prices prevailing a year ago at this time.

What was Mid-Continent crude a year ago today? Or, what was 58-60 U.S. Motor gasoline in Oklahoma? Or, the tankwagon price of gasoline a year ago? These are some of the questions you are asking yourself right now.

You can get the answers most conveniently, rapidly and accurately in the OIL PRICE HANDBOOK for 1926. It contains the refinery, tankwagon, crude prices and export markets for the entire year 1926 as published in the weekly issues of National Petroleum News. 146 pages, cloth bound, marginal index—price $5. Send for your copy *today*.

NATIONAL PETROLEUM NEWS **1213 W. 3rd St. Cleveland, Ohio**

Trade in Chicago Believes Price Adjustment Clears Ohio Market

Staff Special
CHICAGO, Oct. 1

CONSIDERABLE discussion developed in the Chicago resale market as a result of Saturday's gasoline price reduction by Standard Oil Co. of Ohio. Some inquiries for large amounts of 58-60 U. S. Motor were reported from Ohio jobbers soon after the price revision was announced Friday.

The opinion of some oil members here is that the Ohio reduction has cleared up the market situation in that territory. Jobbers have been anticipating a change in some form or another, they think, and have stayed out of the market except for spot requirements until it should come. With the elimination of the Q.D.A. and the wide discounts on coupon books, the jobbers have a better marketing situation along with the belief that the market will stand for a while as it is.

The demand for 58-60 U. S. Motor gasoline was relatively quiet all week. Buying was mostly hand-to-mouth with no large sales reported. The bulk of sales Monday and Tuesday was at 6.25 cents. On Wednesday sales at 6.125 cents became a market factor and the rest of the week they continued mostly at 6.125 and 6.25 cents.

Demand for higher gravity gasolines was reported good all week, especially in the latter half. The 60-62, 437 e.p. was sold mostly at 6.375 cents all week with some sales at 6.25 cents. Most sales of the 60-62, 400 e.p. gasoline were at 6.625 to 6.75 cents. The 64-66, 375 e.p. grade opened the week at 6.875 to 7 cents and remained at that figure until Thursday when most sales and quotations were at 7 to 7.125 cents. Prices remained steady at these figures until the week ended. Some sales of this grade were reported at 7.25 cents.

Kerosene continued in good demand all week. The 41-43 w.w. moved mostly at 4.25 cents Monday and Tuesday but moved up an 0.125-cent Wednesday and ended the week at 4.25 to 4.375 cents.

The 38-40 straw distillate was quiet during the first part of the week but demand picked up considerably during the closing days. Prices remained unchanged at 3.25 to 3.375 cents.

Gas oils were reported in good demand throughout the week especially in the last few days at generally unchanged prices. The 32-36 ordinary dark gas oil moved at 2.50 to 2.625 cents all week with more sales at the latter price as the week ended. Dark gas oil with a zero cold test sold throughout the week at 2.625 to 2.75 cents. The 32-36 straw zero gas oil was steady at 3 to 3.125 cents.

Numerous industrial inquiries for fuel oil over October were reported in the market this week. Most quarters reported a good demand for fuel oils this week, with some reporting an especially good demand during the last few days. The 28-30 fuel oil moved all week at $1.00 to $1.05. The 24-26 fuel oil was selling at $0.85 to $0.875 on Saturday after moving at $0.85 flat most of the week. Fuel oil of 22-26 gravity was steady at $0.85 flat. The 18-22 fuel oil was unchanged at $0.80 to $0.825. Smackover quotations were lower this week with quotations ranging from $1.05 to $1.075.

Rainy weather with one or two days fair is the forecast for Standard of Indiana territory next week. Temperatures will be about normal during the first part of the week and colder during the closing days.

PLATT'S
OILGRAM
Petroleum Markets Every Day

HOW SURE ARE YOU?

If you were to place an order *today* for gasoline, or kerosene, or fuel oil, or lubricating oil—

How sure would you be that you were buying *at the right time* and *at the actual market?*

Did you hear of a tankwagon cut today in another territory, which might indicate a cut coming in yours? Or, did crude change today? Or, did some one put in a big buying order for export which will stiffen the gasoline market ¼ cent or so tomorrow?

A large part of your profits come from *daily accurate knowledge* of market prices and conditions.

PLATT'S OILGRAM brings you this market information from an unbiased source daily. Costs only 30 cents a day—a year for $75, or 3 months for $25. It's your greatest aid to showing PROFIT at the end of the year.

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CHICAGO—35 E. Wacker Drive
NEW YORK—342 Madison Ave.
CLEVELAND—709 Penton Bldg.

Week's Price Changes Tank Wagon Markets

Gasoline Changes

Standard of Kentucky—T. w. and s. s. prices gasoline advanced 3 cents, Florida, **Sept. 27.** Last previous general change in Florida was 3 cents cut on **Aug. 11.**

Standard of Indiana—T. w. and s. s. prices gasoline reduced 2.2 cents, Grand Rapids, to 15.5 cents and 17.5 cents respectively, including 3 cent state tax, **Sept. 24.**

Standard of Ohio—T. w. and s. s. prices gasoline reduced 2 cents, through Ohio, to 17 cents and 19 cents generally, respectively, including 3 cent state tax, **Oct. 1.**

Continental Oil—T. w. and s. s. prices gasoline reduced 1 cent generally, Colorado and Wyoming, except Denver and a few other points unchanged, **Sept. 28.**

Canada—T. w. and s. s. prices gasoline reduced 2 cents, Calgary to 25.5 cents and 29 cents, including 3 cent provincial tax, **Aug. 11.** T. w. and s. s. prices reduced 2 cents, Sydney, 27.5 cents and 32 cents respectively, including 3 cent provincial tax, **Aug. 11.**

Kerosene Changes

Canada—Kerosene reduced 2 cents, Sydney, to 24 cents t. w., **Aug. 11.**

Magnolia Petroleum—T. w. and s. s. prices gasoline reduced 2 cents, Houston, to 15 cents, including 3 cent state tax, **Sept. 27.**

T. w. price gasoline cut 2 cents, s. s. price but 4 cents, Oklahoma City, to 13 cents and 14 cents respectively, including 3 cent state tax, **Oct. 1.**

EASTERN KENTUCKY REFINERY MARKET

ASHLAND, Oct. 3.—Prices of 60-62 and 64-66 gasolines are up ⅛-cent over prices of Sept. 19. No 68-70 grade is available in this district on account of output of that product being committed. Kerosene prices are up ¼-cent. Gas and fuel oils are unchanged. Prices on Oct. 3 and Sept. 19 were:

	Oct. 3	Sept. 19
60-62, 400-425 e.p. gasoline	9.25	9.125
64-66, 375-390 e.p. gasoline....	9.50	9.375
68-70, 325-350 e.p. gasoline....	.....	9.50
41-43 w.w. kerosene	6.50	6.25
34-36 gas oil	4.75	4.75
24-26 fuel oil	3.50	3.50
14-16 fuel oil	3.375	3.375

Oil Jobbers Corp. Moves

BUFFALO, N. Y., Oct. 1.—Oil Jobbers Corp., of which L. Rex Babbitt is manager, moved its offices Sept. 28 from 1210 Prudential Bldg. to 1801 Hotel Statler Bldg. The corporation's new suite on the top floor of the new Hotel Statler overlooks Niagara square, the eastern end of Lake Erie and Canadian towns across the Niagara river. The corporation does a carload marketing business in all petroleum products.

Tank Wagon, Service Station Markets for Gasoline and Kerosene In United States Territories and Canada

(OIL PRICE HANDBOOK has t.w. and s.s. markets for whole year arranged for quick reference)

These Prices In Effect October 3, 1927

S.O. NEW JERSEY TERRITORY

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W.
Atlantic City, N. J.	16	2	18	20	14
Newark, N. J.	16	2	18	20	14
Annapolis, Md.	16	4	20	23	12
Baltimore, Md.	16	4	20	23	10
Cumberland, Md.	16	4	20	23	14
Washington, D. C.	16	2	18	21	12
Danville, Va.	16	4½	20.5	*	14
Norfolk, Va.	16	4½	20.5	23.5	12
Richmond, Va.	14	4½	18.5	21.5	14
Roanoke, Va.	16	4½	20.5	23.5	14
Petersburg, Va.	16	4½	20.5	23.5	14
Williamsburg, Va.	16	4½	20.5	23.5	14
Charleston, W. Va.	16	4	20	23	14
Clarksburg, W. Va.	16	4	20	21	14
Keyser, W. Va.	16	4	20	*	14
Parkersburg, W. Va.	13	4	17	20	14
Wheeling, W. Va.	16	4	20	23	14
Charlotte, N. C.	16	4	20	23	14
Hickory, N. C.	16	4	20	23	14
High Point, N. C.	16	4	20	20	14
Mt. Airy, N. C.	16	4	20	23	14
Salisbury, N. C.	16	4	20	23	14
Charleston, S. C.	15	5	20	23	14
Columbia, S. C.	15	5	20	23	14

*Dealers set own prices. S. O. New Jersey does not operate station..

S. O. NEW YORK

Due to local price conditions at many points in S. O. New York territory, actual prices on both gasoline and kerosene are being made at under the posted tank wagon prices published below.

*New York City	17	0	17	21	15
Albany, N. Y.	17	0	17	19	15
Buffalo, N. Y.	15	0	15	18	14
†Rochester, N. Y.	13	0	13	16	13
Syracuse, N. Y.	17	0	17	19	15
Boston, Mass.	17	0	17	18	15
Augusta, Me.	17	3	20	22	15
Manchester, N. H.	17	2	19	21	15
Burlington, Vt.	17	3	20	22	15

*In steel barrels.

†It is reported that S. O. New York is selling a second grade of gasoline at Rochester, 4c below the above posted prices which apply on its Socony grade.

ATLANTIC REFINING

Pittsburgh, Pa.	16	*	16	*22	14
Philadelphia, Pa.	15	*	15	*21	14
Allentown, Pa.	16	*	16	*22	14
Erie, Pa.	12	*	12	*18	14
Scranton, Pa.	16	*	16	*22	14
Altoona, Pa.	16	*	16	*22	14
Dover, Del.	16	3	19	22	14
Wilmington, Del.	16	3	19	22	14
Providence, R. I.	17	2	19	19	15
Boston, Mass.	17	0	17	17	15
Springfield, Mass.	17	0	17	17	15
Worcester, Mass.	17	0	17	17	15
Hartford, Conn.	19	2	21	22	15
New Haven, Conn.	19	2	21	21	15

*3-cent state tax is collected by retail dealer and paid by him directly to state.

S. O. KENTUCKY

Lexington, Ky.	13	5	18	21	15.5
Louisville, Ky.	14	5	19	22	15
Covington, Ky.	14	5	19	22	15.5
Clarksdale, Miss.	13	4	17	20	12.5
Gulfport, Miss.	††14.5	4	††18.5	21.5	14
Jackson, Miss.	13	4	17	20	13.5
Natchez, Miss.	12.5	4	16.5	19.5	14
Vicksburg, Miss.	12.5	4	16.5	19.5	14
Birmingham, Ala.	14	4	18	21	15.5
Mobile, Ala.	13	4	17	20	15
Montgomery, Ala.*	15	4	19	22	16.5
Atlanta, Ga.	12	4	16	18	†15.5
Augusta, Ga.	15	4	19	22	†16.5
Macon, Ga.	15	4	19	22	†16.5
Savannah, Ga.	12	4	16	18	†14.5
Jacksonville, Fla.°	13	5	18	21	14
Miami, Fla.°	15	5	20	23	15.5
Tampa, Fla.°	12	5	17	20	14
Pensacola, Fla.°	**14	5	**19	22	15

*Local privilege tax of 1 cent on gasoline and ½ cent on kerosene at Montgomery included.

†Georgia kerosene prices include 1c state tax.

°Florida gasoline prices include ⅛c inspection fee.

**Both tank wagon prices include 1c city tax at Pensacola, which went into effect Oct. 15, 1926.

††Both tank wagon prices at Gulfport include Harrison county privilege tax of 2c.

S. O. INDIANA

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W.
Chicago, Ill.	14	2	16	18	12
Decatur, Ill.	8.5	2	10.5	12.5	12.1
E. St. Louis, Ill.	13.1	2	15.1	17.35	11.2
Joliet, Ill.	14.4	2	16.4	18.4	12.3
Peoria, Ill.	10	2	12	12	12.1
Quincy, Ill.	14.2	2	16.2	18.2	11.9
Indianapolis, Ind.	12.2	3	15.2	15.2	13.2
Evansville, Ind.	14	3	17	19	13
South Bend, Ind.	12	3	15	15	13.4
Detroit, Mich.	14.8	3	17.8	19.8	13.7
Grand Rapids, Mich.	12.5	3	15.5	17.5	13.6
Saginaw, Mich.	14.9	3	17.9	19.9	13.8
Green Bay, Wis.	14.6	2	16.6	18.6	12.4
Madison, Wis.	14.3	2	16.3	18.3	12.1
Milwaukee, Wis.	14.1	2	16.1	18.1	11.9
La Crosse, Wis.	15.2	2	17.2	19.2	13
Minneapolis, Minn.	12	2	14	14	12.9
Duluth, Minn.	13.5	2	15.5	17.5	12.9
Mankato, Minn.	15.1	2	17.1	19.1	12.7
Des Moines, Ia.	14	3	17	19	12.3
Davenport, Ia.	14.5	3	17.5	19.5	12.3
Sioux City, Ia.	14.1	3	17.1	19.1	11.9
Mason City, Ia.	14.5	3	17.5	19.5	12.3
St. Louis, Mo.	*13.6	2	15.6	17.9	11.3
Kansas City, Mo.	†12.9	2	14.9	16.9	10.6
St. Joseph, Mo.	†12.5	2	14.5	16.5	11.2
Fargo, N. D.	15	2	17	19	14.9
Grand Forks, N. D.	17.2	2	19.2	21.2	15.2
Minot, N. D.	16.9	2	18.9	20.9	14.9
Pierre, S. D.	15.5	4	19.5	21.5	13.9
Huron, S. D.	12.5	4	16.5	18.5	13.9
Wichita, Kans.	12.8	2	14.8	16.8	10.8
Bartlesville, Okla.	12.8	3	15.8	17.8	10.8

S. O. Indiana Q. D. A. schedule on tank wagon deliveries of gasoline, effective March 3 thru territory, except Wisconsin effective March 4: 50 gals. and over on delivery, 1c discount, except in city of Chicago where 1c discount applies on 100 gals. and over; 6,000 gals. and over per month, 1½c; 10,000 gals. and over per month, 2c; 15,000 gals. and over per month 3c, except latter discount does not apply in Chicago.

Service station discounts: 200 gals. or more per month, and 2400 gals. or more per year, 2c per gal.

March 1, 1c discount on kerosene in 50 gal. dumps thru territory.

*Includes city tax of ½c.

†Includes city tax of 1c.

S. O. NEBRASKA

Omaha, Neb.	14.25	2	16.25	16.25	12.25
McCook	12.75	2	14.75	16.75	11.50
Norfolk	14.75	2	16.75	18.75	12.75
North Platte	15.75	2	17.75	19.75	13.50
Scottsbluff	15.25	2	17.25	19.25	13.00

CONTINENTAL OIL

Denver, Colo.	13	3	16	18	12.5
Pueblo, Colo.	14	3	17	19	14.5
Grand Junction, Colo.	17.5	3	20.5	22.5	18
Casper, Wyo.	14	3	17	19	13
Cheyenne, Wyo.	15	3	18	20	14.5
Butte, Mont.	19	3	22	22	19
Helena, Mont.	19.5	3	22.5	24.5	19
Salt Lake City, Utah	17.5	3½	21	23	17
Boise, Ida.	19.5	4	23.5	25.5	19
Twin Falls, Ida.	19.5	4	23.5	25.5	19
Albuquerque, N. M.	16	5	21	24	17

S. O. CALIFORNIA

Phoenix, Ariz.	19	3	22	26	21.5
Los Angeles, Cal.	13.5	3	16.5	20.5	15.5
Fresno, Cal.	14	3	17	21	16.5
San Francisco, Cal.	14	3	17	21	15.5
Reno, Nev.	18	4	22	26	19
Portland, Ore.	14.5	3	17.5	21.5	16.5
Seattle, Wash.	14.5	2	16.5	20.5	16.5
Spokane, Wash.	18.5	2	20.5	24.5	20.5
Tacoma, Wash.	14.5	2	16.5	20.5	16.5

S. O. LOUISIANA

Little Rock, Ark.	13	5	18	21	12
Alexandria, La.	13	2	15	18	†14
Baton Rouge, La.	12	2	14	17	†12.5
Lake Charles, La.	13.5	2	15.5	18.5	†14
New Orleans, La.	*12.5	2	*14.5	*18.5	*14
Shreveport, La.	13.5	2	15.5	18.5	†13
Lafayette, La.	13	2	15	18	†13.5
Bristol, Tenn.	16	3	19	22	14
Chattanooga, Tenn.	16.5	3	19.5	22.5	15
Knoxville, Tenn.	16.5	3	19.5	22.5	15
Nashville, Tenn.	15	3	18	21	15
Memphis, Tenn.	12	3	15	18	14

*New Orleans gasoline prices include 1c parish tax in addition to 2c state tax, and kerosene prices include 1c state tax and 1c parish tax.

†Kerosene price in Louisiana includes 1c state tax.

S. O. OHIO

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W.
All Ohio points	14	3	17	19	14

MAGNOLIA PETROLEUM

Muskogee, Okla.	12	3	15	18	9
Oklahoma City	10	3	13	14	9
Tulsa, Okla.	12	3	15	18	9
Fort Smith, Ark.*	11	*3	14	17	12
Little Rock, Ark.	11	5	16	18	12
Texarkana, Ark. *	12	*3	15	18	12
Dallas, Tex.	14	3	17	17	11
Fort Worth, Tex.	13	3	16	16	10
Houston, Tex.	12	3	15	15	15
San Antonio, Tex.	13	3	16	16	11
El Paso, Tex.	15	3	18	18	16

*Within City of Texarkana and Fort Smith, the state tax on gasoline is 3c per gal. conforming with the Texas state tax. In these two districts outside of the city the 5c Arkansas tax applies.

V. M. & P. NAPHTHA

(Changes ordinarily occur coincident with gasoline price changes)

	Oleum Spirits	V.M. & P. Naphtha	Cleaner Naphtha
Chicago	16	18	18
Detroit	17.7	19.7	19.7
Kansas City	16.2	†18.2	†18.2
Milwaukee	16.7	*20.7	*20.7
Minneapolis	*20	*22	*22
St. Louis	15.9	17.9	17.9
New York	...	19	....

*Includes 2c state tax.

†Includes 1c city tax.

CANADA

(Per Imperial Gallon, which is 1.2 American Gallons)

ONTARIO

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W.
Toronto	19.5	3	22.5	26	21
Ottawa	19.5	3	22.5	26	21
Cochrane	24.5	3	27.5	36	26
Ft. William	24.5	3	27.5	31	23.5

MANITOBA

Winnipeg	24.5	3	27.5	31	23.5

SASKATCHEWAN

Regina	27.5	0	27.5	32	26.5

ALBERTA

Edmonton	26.5	3	29.5	33	25.5
Calgary	22.5	3	25.5	29	23.5

BRITISH COLUMBIA

Vancouver	21	3	24	27	22

QUEBEC

Montreal	20.5	3	23.5	27	21
Quebec City	22.5	3	25.5	31	23
Three Rivers	22.5	3	25.5	30	23

NEW BRUNSWICK

St. John	24.5	3	27.5	32	24
Moncton	24.5	3	27.5	32	24

NOVA SCOTIA

Halifax	24.5	3	27.5	32	24
Sydney	24.5	3	27.5	32	24

PRINCE EDWARD ISLAND

Charlottetown	24.5	3	27.5	31	24

Note: In districts surrounding these points 1c additional is added to city price.

North Atlantic Gasoline Steady; Prices Fall ¼ Cent in South

Staff Special
NEW YORK, Oct. 1

GASOLINE markets along the eastern seaboard were fairly steady this week. The only price recessions were at a few points on the southern part of the coast and these were small. At northern points prices showed little variation from the levels of a week ago.

A lull in buying was noted early in the week, partly due to the fact that jobbers were waiting until virtually the last day of the month to cover October requirements, and also because of the erratic turn the weather took. Temperatures fell way below normal for the season and from Baltimore to Portland and were not at all conducive to pleasure driving.

Toward the end of the week there were fair indications that the 1927 motoring season might be resumed along the entire coast. A mild heat wave spread over the seaboard and the spirits of many of the trade were brightened with the possibility of a material increase in jobbing demand for gasoline next week.

The U. S. Motor gasoline market opened at 8 to 8.25 cents in New York and Philadelphia on Monday. Asking prices were generally unchanged all week, but many of the trade held the opinion that the bulk of movement was at 8 cents. Lower quotations to the jobbing trade were not heard but prices were being made to resale agents which permitted them to sell at 8 cents, and a number of the trade took this as a reasonable indication that prices were not firmly established at current levels.

The decline in Ohio tank wagon prices came as somewhat of a blow to the eastern market. One dealer asserted it meant a lowering of refinery prices in the east if an eastern seller wanted this class of business, and eventually it would affect prices for shipment to less remote points.

There were fewer 8-cent quotations for U. S. Motor gasoline at Savannah and Jacksonville, the majority of sellers asking 7.75 cents. The top prices quoted by one or two sellers at Baltimore also were lowered 0.25 cent about the middle of the week. On the other hand, one large seller of California gasoline at Baltimore asserted he was still getting a fair volume of business at 8.50 cents. At Boston and Providence, U. S. Motor gasoline was largely held at 8.50 cents for spot shipment, but indications were that prices might have to be shaded slightly for October business.

Kerosene prices were generally unchanged at the levels established late last week. Jobbing demand has not improved much but the fact that several large refiners are buying for their own stations together with a reported scarcity of kerosene has kept prices from showing little if any fluctuations. The majority of refiners in New York harbor now quote 7 cents for water white goods, but considerable business has been placed at 6.75 cents this week.

List prices for gas oil were unchanged this week but sellers in the New England district reported they were running into low prices quoted out of New York harbor. The general asking price for 28-34 gas oil, f.o.b. New York harbor, is 5 cents a gallon. Furnace oil was largely held at 6 cents a gallon.

The bunker oil market was down 10 cents to $1.55 a barrel, Standard Oil Co. of New Jersey reducing its quotation for Grade C Oct. 1. Other major sellers immediately met the cut. Reports that this oil was available at $1.55 in Philadelphia earlier in the week could not be confirmed.

Gulf Export Market is Inactive; Refiners Buy Light Gasolines

Staff Special
NEW YORK, Oct. 1

THE Gulf export market was comparatively quiet this week. There were few inquiries from overseas. The continued lull in foreign demand, however, failed to hamper prices in any way. Refiners were firm in their gasoline quotations toward the end of the week and kerosene quotations, at least those of the leading refiners, were generally 0.5 cent a gallon over last week.

A leading broker early in the week had an inquiry for approximately 35,000 barrels of prime white kerosene from a Scandinavian buyer. No buying materialized because kerosene is extremely scarce and the buyer expressed unwillingness to pay the current asking price. The broker said he was at a loss to know where to look for the goods.

An inquiry from a European buyer for approximately 60,000 barrels of U. S. Motor and 64-66, 375 end point gasolines which appeared in the market around the middle of the week, was later withdrawn, the purchaser asserting he wished to postpone buying indefinitely.

Refiners that export direct were active. It was reported that one large refiner had paid 6.75 cents for a considerable quantity of 390 end point gasoline in north Texas, and was bidding 7 cents for 64-66, 375 end point goods. It was also reported that another leading refiner is short approximately 3,000,000 gallons of 375 end point gasoline on export orders and is picking up small lots in the Mid-Continent although the supply in that area is reported small.

In view of the foregoing it was generally conceded that the tendency of gasoline prices in the near future would not be downward.

A cable from Paris reported the offer of a distress cargo of 64-66, 375 end point gasoline at around 7.50 cents. Why the offer was at a figure approximately 1 cent under the generally accepted market price could not be learned.

An advance in export prices for kerosene in cases at New York by the Standard Oil Co. of New Jersey tended to improve the kerosene situation at the Gulf. Coincident with the advance at New York, the few refiners in the Gulf region who were not already listing water white and prime white kerosene at 7 cents and 6 cents respectively, advanced their prices accordingly. The foregoing quotations are 1 cent a gallon more than list prices of less than 10 days ago. Although no bulk export business has been placed at the Gulf since the increase, it is generally believed buyers will find it difficult to shade the new prices.

Gas oil quotations were generally 0.125 to 0.25 cent higher than a week ago. The supply continued scarce, and one refiner asserted it was doubtful if any one supplier at the Gulf would be able to make up a full cargo of gas oil. Material was reported plentiful in California, and the firm offer of a cargo of gas oil at 4.25 cents, the Gulf, for October-November made by a New York broker was believed to have been made on goods originating in the former area. Translucent gas oil, 28-30 gravity, was quoted 4.125 to 4.25 cents by Gulf refiners and 30-32 gravity at 4.25 cents flat.

The bunker oil market was generally unchanged. Grade C was quoted at $1.30 by most dealers but firm offers continued to be made at $1.25 a barrel in cargoes. For bunkering, prices were unchanged at $1.40 to $1.45.

W. C. Bean is now in charge of southern Oklahoma geological work for Roxana Petroleum Corp., with headquarters at Ardmore. Previously he had been for four years in charge of similar work at Wichita Falls.

Complete Seaboard Market

(Export markets for whole year given in OIL PRICE HANDBOOK. Each volume carries refinery, tank wagon, crude and export markets—complete for the years 1924-1925-1926)

Eastern Domestic Markets

(Prices in bulk except where otherwise noted f.o.b. refinery or seaboard plant)

	Oct. 3	Sept. 26
U. S. Motor gasoline, tank cars, New York Harbor	8.00 – 8.25	8.00 – 8.25
U. S. Motor gasoline, tank cars, Philadelphia	8.00 – 8.25	8.00 – 8.25
U. S. Motor gasoline, tank cars, Baltimore	8.00 – 8.25	8.00 – 8.50
U. S. Motor gasoline, tank cars, *Boston	8.25 – 8.50	8.50
U. S. Motor gasoline tank cars, Norfolk	8.00 – 8.25	8.00 – 8.50
U. S. Motor gasoline tank cars, Charleston	8.00	8.00
U. S. Motor gasoline tank cars, Jacksonville	7.75	7.75 – 8.00
U. S. Motor gasoline tank cars, *Providence	8.25 – 8.50	8.50
U. S. Motor gasoline tank cars, Savannah	7.75	7.75 – 8.00
California U. S. Motor gasoline, tank cars, Philadelphia	8.00 – 8.25	8.00 – 8.25
California U. S. Motor gasoline, tank cars, Baltimore	8.00 – 8.50	8.00 – 8.75
41-43 w.w. kerosene, New York	6.75 – 7.00	6.75
41-43 w.w. kerosene, Philadelphia	6.75 – 7.00	6.75
41-43 p. w. kerosene, *Boston	7.00	6.75
28-34 gas oil, New York	4.75 – 5.00	5.00 – 5.25
28-34 gas oil, *Boston	5.00	5.00
38-42 furnace oil, New York	6.00	6.00
36-40 Furnace Oil, *Boston	6.25	6.25
Grade C bunker oil, New York	$1.55	$1.65
Grade C bunker oil, *Boston	$1.60 –$1.65	$1.65 –$1.70
Diesel oil, New York	$2.10	$2.10
Russian 885-890 s.g., 325-330 vis. medicinal		$0.75 –$0.85
Russian 870-875 s.g., 150-155 vis. medicinal		$0.67 –$0.77
Russian 860-865 s.g., 80-85 vis. medicinal		$0.65 –$0.75

*F.O.B. New England refineries and seaboard terminals.

New York Export Market

(Gasoline and kerosene in cases in bulk. Lubricating oils are all Penna. products, prices per gal. in bbls.)

	Oct. 3	Sept. 26
U. S. Motor gasoline	24.40	24.40
43-45, 150 w.w. kerosene	18.15	17.65
42-44, 110 s.w. kerosene	17.15	16.65
CYLINDER OILS		
Bright stock, dark	40.00 –41.00	40.00 –41.00
Filtered D 600	31.00 –32.00	3.100 –32.00
Filtered E 600 Warren	25.00 –26.00	25.00 –26.00
Unfiltered 600 s.r.	16.50 –17.50	1.650 –17.50
Unfiltered 650 s.r.	17.50 –18.50	17.50 –18.50
600 Flash s.r.	22.00 –23.00	22.00 –23.00
630 Flash s.r.	33.00	33.00
RED ENGINE OILS (Vis. 100°)		
300 vis. No. 6½ color	20.00	20.00
250 vis. No. 6 color	19.00	19.00
200 vis. No. 6 color	18.50	18.50
PALE ENGINE OILS (Vis. 100°)		
230 vis. No. 3¾ color	24.00	24.00
180 vis. No. 3¼ color	20.00	20.00
100 vis. No. 2¼ color	15.75	15.75
MOTOR OILS (Vis. 100°)		
600 vis. No. 7 color	35.00	35.00
500 vis. No. 6½ color	33.00	33.00
400 vis. No. 7¼ color	31.00	31.00
300 vis. No. 6 color	30.00	30.00
200 vis. No. 3¼ color	24.00	24.00
MEDICINAL OILS		
875-885 s.g.		$0.80
865-870 s.g.		$0.70

WAXES (Pa. stocks; in cents per pound, f.a.s. carload lots)

WHITE CRUDE SCALE (In barrels)	Oct. 3	Sept. 26
122-124 A.m.p.	3.00 – 3.125	3.00 – 3.125
124-126 A.m.p.	3.00 – 3.125	3.00 – 3.125
FULLY REFINED (In burlap bags)		
123-125 A.m.p. Philadelphia	4.25	4.25
125-127 A.m.p.	4.25	4.25
128-130 A.m.p.	4.25 – 4.375	4.25 – 4.375
130-132 A.m.p.	4.50 – 4.625	4.50 – 4.625
133-135 A.m.p.	*5.75	*5.75
135-137 A.m.p.	*6.00 – 6.50	*6.00 – 6.50
YELLOW CRUDE SCALE		
124-126 A.m.p.	2.875– 3.00	2.875– 3.00

* Prices Nominal

Gulf Export Market

(F.o.b. Gulf oil terminals in Texas and Louisiana, shipments of 20,000 bbls. and over, except where otherwise noted.)

GASOLINE	Oct. 3	Sept. 26
U. S. Motor	7.375– 7.50	7.25
61-63, 390 e.p.	7.875– 8.00	7.75
64-66, 375 e.p.	8.375– 8.50	8.25
U. S. Motor, cases (cargo lots)	$1.65	$1.65
64-66, cases (cargo lots)	$1.80	$1.80
KEROSENE		
44 water white	7.00	6.50
41-43 prime white	6.00	5.50
Water white, cases (cargo lots)	$1.60	$1.60
Prime white, cases (cargo lots)	$1.50	$1.50
DOMESTIC GAS AND BUNKER OILS		
*26-28 gas oil	4.125– 4.25	3.875– 4.00
*30-32 gas oil	4.25	4.00
Grade C bunker oil	$1.40 –$1.45	$1.40 –$1.45
Grade C bunker oil, cargoes	$1.25 –$1.30	$1.25 –$1.30

*Translucent thru neck of 4 oz. bottle.

MEXICAN CRUDE AND BUNKER OILS (F.o.b. steamer, Tampico)		
Heavy Panuco crude taxes to be paid	$1.15	$1.15
Grade C bunker oil, for bunkering purposes, taxes paid	$1.50	$1.50

SOUTH TEXAS LUBRICATING OILS (Viscosity at 100°F; cold test 0) (Tanker, f.o.b. Houston)

100 vis. No. 2 unfiltered pale	6.00 – 6.25	6.00 – 6.25
200 vis. No. 3 unfiltered pale	8.50 – 9.00	8.50 – 9.00
300 vis. No. 3 unfiltered pale	9.50 –10.00	9.50 –10.00
500 vis. No. 3½ unfiltered pale	11.00 –12.00	11.00 –12.00
200 vis. No. 5½ red oil	7.00 – 8.00	7.00 – 8.00
300 vis. No. 5½ red oil	8.00 – 9.00	8.00 – 9.00
500 vis. No. 6 red oil	10.00 –10.50	10.00 –10.50

Pacific Export Market

(Quotations are at seaboard, Los Angeles, in cargo lots, cents per gallon, except where otherwise noted.)

	Oct. 3	Sept. 26
Gasoline, U. S. Motor, 53-55 Gravity	6.00 – 7.00	6.00 – 7.00
Gasoline, U. S. Motor, blends and special cuts	7.00 – 8.00	7.00 – 8.00
Gas Oil, 30-34, per bbl.	$0.90 –$1.00	$0.90 –$1.00
Diesel Oil, 27 plus, per bbl.	$0.80 –$1.00	$0.80 –$1.00
Bunker Oil, 14-18, per bbl.	$0.85 –$1.00	$0.85 –$1.00
Fuel Oil, 14-18, per bbl.	$0.80 –$0.90	$0.80 –$0.90
Kerosene, 38-40 w.w., 125-150 flash, in gals.	4.50 – 5.00	4.50 – 5.00
Cased Goods		
Gasoline, U. S. Motor	$1.70 –$1.80	$1.70 –$1.80
Kerosene, 38-40, w.w., 125-150 flash	$1.35 –$1.50	$1.35 –$1.50

Cased Kerosene Prices Advanced ½ Cent

Staff Special

NEW YORK, Oct. 1.—An additional 0.5 cent advance in export prices of kerosene in cases announced by the Standard Oil Co. of New Jersey Sept. 29, brought this company's posted price for 43-45, 150 water white goods to 18.15 cents a gallon and of 42-44, 110 standard white to 17.15 cents a gallon. The advance was the second to be made within two weeks and was more or less expected by the trade in New York in view of the advancing markets in other refining centers.

The wax market was slow this week and prices for white crude scale and fully refined grades showed no change over last week. Only the usual volume of routine business was reported placed. Inquiries for sizable quantities were lacking, and the possibility of a slightly lower market next week was expressed by several dealers.

Domestic demand for lubricating oils was better than demand from foreign buyers. Prices of some steam refined oils showed slight fluctuations this week but generally asking prices for the whole list of oils were unchanged as business closed today.

Natural Gas Demand Gains Tenth

WASHINGTON, Oct. 1.—A 10 per cent increase in natural gas production and demand was made in 1926 over 1925. Output reached 1,313,019,000,000 cubic feet. Of this amount 166,000,000 cubic feet were piped to Mexico and Canada, leaving 1,312,853,000,000 cubic feet for domestic consumption. Value at wells increased from 9.4 cents to 9.5 cents over 1925, and at point of consumption increased from 22.3 to 22.8 cents.

Domestic household consumers used 22 per cent of the total consumption. Oklahoma, which ranks first, recorded a 15 per cent gain in output; California, second, a 9 per cent gain; but production in West Virginia, the next ranking state, decreased slightly.

NEW YORK.—Among the exhibits at the annual meeting of the Railway Association at Cleveland on Oct. 3 to 7, was one by Crew Levick Co., Cities Service Oil Co., Empire Refineries, Inc., and Cities Service Refining Co., according to Richard A. Wotowitch, of the Henry L. Doherty Co., here.

Crude Oil Prices, as Posted by Major

(Crude prices for years 1924-1925-1926 in

EASTERN FIELDS

(Posted by Joseph Seep Purchasing Agency)

Penna. Grade Oil in New York Transit Lines (Alleghany, N. Y. District)	$2.65
Bradford District Oil in National Transit Lines (Bradford District)	2.65
Penna. Grade Oil in National Transit Lines (Other Pennsylvania)	2.55
Penna. Grade Oil in Southwest Penna. Pipe Lines (Other Pennsylvania)	2.55
Penna. Grade Oil in Eureka Pipe Lines (West Virginia)	2.50
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O. district)	2.25
Keister Grade in National Transit Lines (Butler Co.)	1.10
Cabell Grade in Eureka Pipe Lines (West Virginia)	1.40
Corning Grade in Buckeye Pipe Lines (Ohio)	1.45
Corning, O. heavy grade	1.35
*Somerset Oil in Cumberland Pipe Lines (Kentucky)	1.50
Ragland Grade in Cumberland Pipe Lines (Kentucky)	.95

*Somerset oil run prior to Oct. 1922, takes price of 6 cents lower than above quotations.

(Posted by Stoll Oil Refining Co.)

Oil City, Ky., oil in Stoll lines $1.50

CENTRAL STATES FIELDS

Posted by Ohio Oil Co.

Effective March 14, 1927

Wooster	$1.57	Plymouth	$1.33
Lima	1.71	West. Kentucky	1.33
Waterloo	1.35	*Canadian Petro.	2.11
Indiana	1.48	*Oil Springs	2.18
Princeton	1.60	*Posted by Imperial Oil Ltd.	
Illinois	1.60		

OKLAHOMA, KANSAS And NORTH TEXAS

Prices of Prairie Oil & Gas Co.

(In Oklahoma, Kansas, North and East Central Texas)

Effective March 12, 1927

28-28.9	$1.12	35-35.9	$1.26
29-29.9	1.14	36-36.9	1.28
30-30.9	1.16	37-37.9	1.30
31-31.9	1.18	38-38.9	1.32
32-32.9	1.20	39-39.9	1.34
33-33.9	1.22	40-40.9	1.36
34-34.9	1.24	41-41.9	1.38
42-42.9	$1.40	48-48.9	$1.52
43-43.9	1.42	49-49.9	1.54
44-44.9	1.44	50-50.9	1.56
45-45.9	1.46	51-51.9	1.58
46-46.9	1.48	52 and above	1.60
47-47.9	1.50		

Above schedule met on March 12, by Gulf, Mid-Continent Pet. Corp., and Empire; by Carter, Humble and the Texas Co. on March 14.

Humble Oil & Refining Co. Prices
(Ranger, North Texas, Mexia, Powell, Richland, Wortham, Lytton Springs, Currie, Moran and Nocona crudes all in Texas.)

March 14, same schedule as Prairie in above fields.

Mirando, Tex. $1.00

Magnolia Petroleum Co.
(In Oklahoma, Kansas and North and East Central Texas)

Effective Sept. 14, Magnolia posted same price schedule as Prairie in above fields except that Magnolia is paying $1.05 for all oil below 30 gravity.

Corsicana heavy $1.00

Carter Oil Co.
(Oklahoma and Kansas)

March 14, same schedule as Prairie.

PANHANDLE, TEXAS
Humble Oil & Refining Co.

Effective Aug. 23

Hutchinson, Carson and Wheeler Counties..$0.75

Pampa, Gray County, Effective March 14:

28-28.9	$ .80	37-37.9	$ .98
29-29.9	.82	38-38.9	1.00
30-30.9	.84	39-39.9	1.02
31-31.9	.86	40-40.9	1.04
32-32.9	.88	41-41.9	1.06
33-33.9	.90	42-42.9	1.08
34-34.9	.92	43-43.9	1.10
35-35.9	.94	44 and above	1.12
36-36.9	.96		

WEST TEXAS
Humble Oil & Refining Co.

Effective Aug. 23

Crane, Upton, Crockett and Pecos Counties...$0.60

NORTH LOUISIANA — ARKANSAS FIELDS

Prices of Standard Oil Co. of Louisiana Caddo, Homer, Haynesville, Bull Bayou, El Dorado, Crichton and De Soto

Effective March 14, 1927

Below 28	$1.10	40-40.9	$1.36
28-28.9	1.12	41-41.9	1.38
29-29.9	1.14	42-42.9	1.40
30-30.9	1.16	43-43.9	1.42
31-31.9	1.18	44-44.9	1.44
32-32.9	1.20	45-45.9	1.46
33-33.9	1.22	46-46.9	1.48
34-34.9	1.24	47-47.9	1.50
35-35.9	1.26	48-48.9	1.52
36-36.9	1.28	49-49.9	1.54
37-37.9	1.30	50-50.9	1.56
38-38.9	1.32	51-51.9	1.58
9-39.9	1.34	52 and above	1.60

*Smackover, below 24	$0.90
* do 24 and above	1.15
Bellevue	1.25
Cotton Valley	1.00
**Urania, La	.90
†East El Dorado	1.00

**Posted by Louisiana Oil Refining Corp.

†Posted by Magnolia Petroleum Co.

*Smackover prices posted on Sept. 20 by S. O. La., Magnolia, Shreveport-El Dorado Pipe Line and Atlantic Oil Producing Co.; on Sept. 23 by The Texas Co.; on Sept. 17, La. Oil Refg. Corp.

STEPHENS, ARKANSAS

Atlantic Oil Producing Co. and Louisiana Oil Refining Corp.

Below 28	$1.00	30-30.9	$1.06
28-28.9	1.02	31-31.9	1.08
29-29.9	1.04	32 and above	1.10

GULF COASTAL

Posted by Humble Oil & Refining Co.

Effective March 14

Grades A	$1.20	29-29.9	$1.25
Grades B:		30-30.9	1.27
Below 25	1.15	31-31.9	1.29
25-25.9	1.17	32-32.9	1.31
26-26.9	1.19	33-33.9	1.33
27-27.9	1.21	34-34.9	1.35
28-28.9	1.23	35 and above	1.37

Fields classified as A and B are Spindletop, Goose Creek, Hull, Liberty, Sour Lake, West Columbia, Orange, Boling and Pierce Junction. All other fields are Grades A only.

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former private secretary; George W. Holland, clerk of the Geological Survey in charge of records; John Halligan Jr., a Navy Department clerk; E. C. Finney, assistant secretary of the Interior; R. E. Lemon, bank employe; Brant Elliott, formerly employed by Fall; Miss Margueritta Trada, employe of a Denver bank; I. B. Humphreys, son of the late A. E. Humphreys, who was identified with the original purchases of oil at the time of the formation of the Continental Trading Co., Limited; A. E. Humphreys, another son; H. M. Blackmer, who was served abroad; M. T. Everhart, Fall's son-in-law; H. B. Ferguson and B. A. Carlisle, of the First National Bank, Pueblo, Col.

The following witnesses have been served with subpoenas duces tecum by the government. They are required to bring specified papers and documents; former Senator Harreld, of Oklahoma who had constituents interested in bidding on the lease; Arlington C. Harvey, general counsel for the Pure Oil Co.; Leslie A. Miller, of the Aero Oil Co., of Cheyenne, Wyo.; B. B. Brooks, president of The Rocky Mountain Oil & Gas Producers Association; Senator Kendrick, of Wyoming, John C. Shaffer, Colorado newspaper publisher, who had a lease just outside the reserve; H. L. Phillips, president of the Sinclair Crude Oil Purchasing Co.; A. E. Watts, vice president of the Sinclair Consolidated Oil Corp.; Birsh Helms, who was in the oil business and came to see Fall in connection with the lease; G. W. Healy and S. A. Brown, of New York bond houses; Amos L. Beaty, of The Texas Co., who wanted a lease; Robert Rae, agent of the Dominion bank; F. Zettler, bank cashier; H. W. Kenwell, secretary of The Mammoth Oil Co.; G. T. Stanford, general counsel for Sinclair Consolidated Oil Corp.; A. Steinmetz, secretary of The Sinclair Consolidated Oil Corp.; Thomas S. White, vice president of the Mammoth Oil Co.,; Kenneth Taylor, son of Col. E. H. Taylor, who sold Fall some Hereford bulls; Mark B. Thompson, acting secretary and treasurer of the Tres Ritos Cattle & Land Co., and personal attorney for Fall; Brant Elliott, agent of the Tres Ritos Cattle & Land Co., The Tres Ritos Cattle & Land Co.; J. E. Benton, bank cashier; Ignacio Gonzales, of the First National Bank of El Paso; Harley V. Speelman, register of the United States treasury; Frank W. Mondell, former member of congress from Wyoming, who had constituents interested in the lease; L. L. Aiken, president of the Midwest Oil Co.; Joseph W. Clark, Colorado lawyer, interested in the lease; H. J. Smith, cashier of the First National Bank of Pueblo, Col., L. T. Rule, assistant cashier of the same bank; A. S. Booth, vice president of the same bank; A. D. Brownsfield, of the Exchange Bank of Carrizozo; M. K. Blackmer, vice president and treasurer of the Midwest Refining Co., and son of H. M. Blackmer; T. A. Pedley, secretary and assistant treasurer of the Midwest Refining Co.; George K. Thomas, secretary of the Pioneer Oil & Refining Co., and son of former Senator Thomas, of Colorado; Albert J. Conway, cashier of the Federal Reserve Bank of Denver, Col.

Purchasers, in All Fields (in Effect October 3)

OIL PRICE HANDBOOK published annually)

GULF COASTAL

Prices of The Texas Co.

(Effective March 14)

Grades A	$1.20	*Grades B	$1.15
‡Grades B (light crude):			
35-35.9	$1.37	38-38.9	$1.43
36-36.9	1.39	39-39.9	1.45
37-37.9	1.41	40 and above	1.47

*Grades B include all heavy crudes which do not meet tests for Grades A or for Gulf Coast light crude.

‡The Texas Co.'s gravity and price schedule on oil below 35° is same as Humble's postings on Grades B.

ROCKY MOUNTAIN FIELDS

Prices of Ohio Oil Co. and Midwest Refining Co.

(Salt Creek prices effective March 12)

‡Salt Creek 29-29.9	$1.14
" " 30-30.9	1.16
" " 31-31.9	1.18
" " 32-32.9	1.20
" " 33-33.9	1.22
" " 34-34.9	1.24
" " 35-35.9	1.26
" " 36-36.9	1.28
" " 37 and above	1.30
Elk Basin	1.33
Grass Creek light	1.33
Big Muddy	$1.25
Lance Creek	1.33
Rock Creek	1.25
Mule Creek	1.30
Rex Lake	1.10
‡Osage	1.33
‡Cat Creek, Mont.	1.33
Sunburst, Mont.	1.35
‡Hogback, N. Mex.	1.38
Artesia, N. Mex.	1.00

‡Posted by Midwest Refining Co. Midwest also buys Grass Creek light and Elk Basin.

The Texas Co. buys Salt Creek and Big Muddy crude.

CALIFORNIA

Standard Oil Co. of California

Santa Maria and Ventura Posted by Union Oil Co.

Gravity	Signal Hill Seal Beach Huntington Beach	Inglewood Torrance	Whittier La Habra	Newhall, McKittrick, Kern River	Olinda-Brea Canon, Richfield	Athens-Rosecrans Dominguez	Montebello	Coyote Hills	Santa Fe Springs	Midway Sunset Buena Vista & Elk Hills	Lost Hills	Coalinga	Wheeler Ridge	Santa Maria	Ventura
14-14.9	$ .85	$ .85	$ .85	$ .75	$ .85	....	$ .85	$ .85	....	$ .75	$ .75	$ .75	$ .75	$ .85	$ .05
15-15.9	.85	.85	.85	.75	.85	....	.85	.85	....	.75	.75	.75	.75	.85	.85
16-16.9	.85	.85	.85	.75	.85	....	.85	.85	....	.75	.75	.75	.75	.85	.85
17-17.9	.85	.85	.85	.75	.85	....	.85	.85	....	.75	.75	.75	.75	.85	.85
18-18.9	.85	.85	.85	.75	.85	....	.85	.85	....	.75	.75	.75	.75	.85	.85
19-19.9	.85	.85	.85	.75	.85	....	.85	.85	....	.75	.75	.75	.75	.85	.85
20-20.9	.85	.85	.85	....	.85	....	.85	.85	....	.77	.77	.76	.78	.85	.85
21-21.9	.86	.86	.85	....	.86	....	.85	.86	....	.79	.79	.77	.81	.85	.85
22-22.9	.87	.87	.85	....	.87	....	.85	.87	....	.81	.81	.78	.85	.85	.85
23-23.9	.88	.88	....	....	.88	....	.85	.88	....	.83	.83	.79	.89	.85	.85
24-24.9	.89	.89	....	....	.89	$ .89	.85	.89	.85	$ .85	.85	.80	.93	.85	.85
25-25.9	.90	.90	....	....	.90	.90	.86	.90	.85	.87	.87	.81	.97	.86	.86
26-26.9	.92	.92	....	....	.92	.92	.87	.91	.85	.89	.89	.83	1.01	.87	.87
27-27.9	.94	.94	....	....	.94	.94	.88	.92	.85	.91	.91	.85	1.05	.88	.88
28-28.9	.96	.96	....	....	.96	.96	.89	.93	.86	.93	.93	.87	....	.89	.89
29-29.9	.98	....	....	....	.98	.98	.90	.94	.87	.96	.96	.89	....	.91	.91
30-30.9	1.00	....	....	....	1.00	1.00	.91	.95	.88	.99	.99	.91	....	.93	.93
31-31.9	1.03	....	....	....	....	1.03	....	....	.89	1.02	1.02	.93	....	....	.95
32-32.9	1.06	....	....	....	....	1.06	....	....	.91	1.05	1.05	.95	....	....	.97
33-33.9	....	....	....	....	....	1.09	....	....	.93	1.08	1.08	.97	....	....	.99
34-34.9	....	....	....	....	....	1.12	....	....	.95	....	1.11	.99	....	....	1.01
35-35.9	....	....	....	....	....	1.15	....	....	.97	....	....	1.01	....	....	1.03
36-36.9	....	....	....	....	....	1.18	....	....	.99	....	....	....	....	....	1.06
37-37.9	....	....	....	....	....	1.21	....	....	1.01	....	....	....	....	....	1.09
38-38.9	....	....	....	....	....	1.24	....	....	1.03	....	....	....	....	....	1.12
39-39.9	....	....	....	....	....	1.27	....	....	1.06	....	....	....	....	....	1.15
40-40.9	....	....	....	....	....	1.30	....	....	1.09	....	....	....	....	....	....
41-41.9	....	....	....	....	....	1.33	....	....	1.12	....	....	....	....	....	....
42-42.9	....	....	....	....	....	1.36	....	....	1.15	....	....	....	....	....	....

*Union Oil Co. also purchases Long Beach Crude and is maintaining the same gravity and price schedule in that field as the Standard maintains in Signal Hill and Huntington Beach fields. The Union also buys and pays the same prices as the Standard in the Rosecrans-Dominguez fields, on gravities ranging from 14 degrees to and including 24.9 degrees and in Santa Fe Springs, on gravities ranging from 20 to and including 23.9 degrees.

Government Calls 78 Witnesses For Sinclair-Fall Trial

WASHINGTON, Sept. 26

ATTORNEYS for the government today made public the names of the witnesses they have called to testify in the trial of Harry F. Sinclair and Albert B. Fall, on indictments accusing them of conspiracy to defraud the government in the Teapot Dome lease and contract, which begins on Oct. 17. Seventy-eight witnesses have been summoned, including H. M. Blackmer, who, as set forth in the NATIONAL PETROLEUM NEWS, at the time, refused to receive a subpoena tendered to him in France commanding him to appear and testify as to the facts in the Continental Trading Co., part of the Teapot Dome affair, Blackmer threw the subpoena back at the consular agent who served him.

Neither former Secretary of the Navy Edwin Denby, nor Rear Admiral John K. Robinson, who was in charge of petroleum matters for the Navy when the lease was made, nor H. Foster Bain, who was chief of the Bureau of Mines and consulted with respect to the lease, have been called by the government, but the defense will call them. Secretary of the Navy Wilbur and Secretary of the Interior Work, have also been served with subpoenas duces tecum by the defense.

The witnesses summoned are as follows: G. D. Wahlberg, Sinclair's former secretary; Mrs. John Kunz and Mrs. Martha Anderson, employed in New York brokerage houses; former Attorney General Harry M. Daugherty; Arthur W. Ambrose, former petroleum expert in the Bureau of Mines; E. F. Bigoney, connected with a New York brokerage house; William A. Anderson, former secretary to Senator Kendrick of Wyoming; Robert W. Stewart, chairman of the board of the Standard Oil Co. of Indiana; Edwin S. Booth, formerly a solicitor of the interior department; Theodore Roosevelt, formerly assistant secretary of the Navy; A. B. Kelly, C. A. Coffey, R. F. Olson and James McGrath, employed in New York brokerage houses; George K. Schuler, who was in command of a squad of marines which Roosevelt ordered to clear Teapot Dome of trespassers when the latter refused to leave the reserve after it had been leased to Sinclair.

Frank E. Kistler, oil man, who tried to lease 640 acres of the reserve; L. E. Eddy, employed in the land office; B. S. Thurmond, New Mexico banker; George Otis Smith, chief of the United States Geological Survey; Capt. H. A. Stuart, U. S. N., whom former Secretary Daniels had placed in charge of the reserve; J. G. Darden, oil man who had claims on the reserve; former Senator Charles S. Thomas of Colorado; Roy W. Tallman, assistant solicitor of the Interior Department, who made a report on the Teapot Dome claims; Stephen G. Quingley, State Department clerk, to bring records; John B. May, private Secretary at the Navy Department; Theodore Mack, Fall's

32 States Report 9.5% Increase In Gasoline Demand This Year

Staff Special

CLEVELAND, Sept. 26

CONSUMPTION of gasoline as indicated by tax and inspection data of 31 states and the District of Columbia, was 9.51 per cent more in the first seven months of 1927 than in the corresponding months of 1926. The statistics were collected by the American Petroleum Institute. This increase is at a lower rate than shown by indicated domestic consumption figures of the Bureau of Mines which show a gain of 13.8 per cent. (See NATIONAL PETROLEUM NEWS, Sept. 14, 1927, page 79.)

Some of the largest consuming states do not make their statistics available to the institute during the year. The bureau's indicated consumption is based on shipments from refineries. Among the states for which are missing from the institute's list are California, Iowa, and Pennsylvania, which are all large consumers, Illinois and New Jersey for which comparative statistics are not available, and New York and Massachusetts which so far have no gasoline taxes.

The largest relative gain in gasoline consumption in the first seven months of 1927 over the corresponding time last year, was Maine with an increase of 24.69 per cent. The largest gallonage gain was in Ohio where consumption as shown by tax figures was 42,605,000 gallons more this year than last. Ohio's total gallonage, 419,082,000 gallons in seven months, was by far the largest reported by on of the 31 states and the District of Columbia.

Texas ran Ohio a close second in gallonage increase with 42,520,000 gallons more to her credit this year than last, a gain of 15.12 per cent. Texas total gallonage in the seven months was 323,809,000 gallons, which put the state in third place among the states that have given out figures. Michigan holds second place with 330,059,000 gallons, an increase of 38,876,000 gallons or 13.35 per cent over last year's consumption for a like time.

Three states report less consumption this year than last. They are Florida, Arkansas and Missouri. Florida's gallonage for the seven months fell 23,022,000 gallons or 13.18 per cent. Missouri reported 5,125,000 gallons less this year and Arkansas 3,383,000 gallons less.

July consumption was less in Delaware, District of Columbia, Florida, North Carolina, North Dakota and South Dakota than June demand. Ohio again led in the increase in July demand over June demand.

Demand in July did not keep pace with the growth in consumption this year, the rate of gain having been only 8.78 per cent more than demand in July, 1926, whereas the gain for seven months was 9.51 per cent.

The accompanying table gives all available figures.

Good Weather Drains Gasoline Stocks

CLEVELAND, Oct. 3.—U. S. Motor gasoline in western Pennsylvania is quoted at 8 to 8.375 cents today with good demand. Several refiners report only a limited supply on hand, as the prolonged spell of good driving weather has drawn heavily on their stocks. One refiner reports no difficulty in getting 8.50 cents although the majority of sales average 8.25 cents.

Kerosene is in heavy demand with quotations generally 0.50 cent higher than last week. 45 w. w. is quoted at 6.50 to 6.75 cents today. The 36-40 fuel oil has also advanced but the 28-32 and 30-34 grades are unchanged. The 36-40 fuel oil is quoted at 4.75 cents by most refiners.

Neutral oils are moving steadily at practically unchanged quotations. The 200 No. 3 is reported scarce.

Cylinder stocks demand is growing. The 600 steam refined is quoted at 10 to 10.25 cents today. Cold test stocks are steady with demand normal.

Wax is active at 3.125 to 3.25 cents. Petrolatums continue to advance, being 0.50 to 0.75 cent higher than a week ago.

R. G. Cocanower, who was formerly first assistant salesmanager under P. R. Naylor for the Midwest Refining Co. at Denver, has been appointed sales and traffic manager of the Amarillo Refining Co., Inc., Amarillo, Tex. Mr. Cocanower will have charge of tank car sales, according to E. L. Moon, of the Amarillo company.

Gasoline Consumption as Indicated by Tax and Inspection Data

	June, 1927 Gallons	July, 1927 Gallons	July, 1926 Gallons	% Change July 1927 over July, 1926	7 Months Ended with— July, 1927 Gallons	July, 1926 Gallons	% Change
Alabama	12,369,000	13,550,000	12,304,000	+10.13	81,347,000	71,063,000	+14.47
Arkansas	8,745,000	9,596,000	8,963,000	+ 7.06	53,378,000	56,761,000	— 5.96
Delaware	3,016,000	2,284,000	1,819,000	+25.56	13,063,000	10,728,000	+21.77
District of Columbia	5,495,000	5,258,000	4,802,000	+ 9.50	32,827,000	28,813,000	+13.93
Florida	20,677,000	17,428,000	22,176,000	—21.41	151,689,000	174,711,000	—13.18
Georgia	15,143,000	16,507,000	13,840,000	+19.27	105,298,000	93,327,000	+12.83
Idaho	4,194,000	4,928,000	4,569,000	+ 7.86	21,730,000	21,064,000	+ 3.16
Indiana	31,643,000	32,995,000	29,318,000	+12.54	179,114,000	158,697,000	+12.87
Kansas	28,024,000	31,847,000	29,270,000	+ 8.80	150,489,000	137,622,000	+ 9.35
Kentucky	10,743,000	12,278,000	10,987,000	+11.75	61,187,000	57,453,000	+ 6.50
Louisiana	11,703,000	12,847,000	12,219,000	+ 5.14	83,068,000	74,980,000	+10.79
Maine	8,767,000	10,325,000	9,454,000	+ 9.21	35,688,000	28,621,000	+24.69
Michigan	58,536,000	65,157,000	57,584,000	+13.15	330,059,000	291,183,000	+13.35
Minnesota	29,754,000	31,909,000	30,492,000	+ 4.65	156,180,000	147,415,000	+ 5.95
Mississippi	9,321,000	10,989,000	10,395,000	+ 5.71	62,403,000	57,923,000	+ 7.73
Missouri	25,937,000	28,997,000	30,637,000	— 5.35	153,463,000	158,588,000	— 3.23
Nevada	1,272,000	1,579,000	1,158,000	+36.36	7,007,000	5,820,000	+20.40
New Hampshire	4,807,000	5,728,000	5,367,000	+ 6.73	22,338,000	18,847,000	+18.52
North Carolina	20,302,000	18,645,000	17,298,000	+ 7.79	116,874,000	108,995,000	+ 7.23
North Dakota	8,884,000	8,507,000	6,832,000	+24.52	41,616,000	41,245,000	+ 0.90
Ohio	66,994,000	75,686,000	71,738,000	+ 5.50	419,082,000	376,477,000	+11.32
Oklahoma	23,097,000	24,435,000	18,800,000	+29.97	140,158,000	114,571,000	+22.33
Oregon	(a) 12,375,000	14,505,000	12,590,000	+15.21	71,197,000	64,946,000	+ 9.62
Rhode Island	5,215,000	6,509,000	6,154,000	+ 5.77	33,952,000	30,331,000	+11.94
South Carolina	8,320,000	9,114,000	8,208,000	+11.04	54,373,000	50,308,000	+ 8.08
South Dakota	8,895,000	7,998,000	7,231,000	+10.61	45,457,000	42,506,000	+ 6.94
Texas	50,100,000	53,255,000	49,304,000	+ 8.01	323,809,000	281,289,000	+15.12
Utah	4,064,000	4,699,000	2,609,000	+80.11	22,665,000	19,592,000	+15.68
Virginia	15,070,000	16,099,000	14,181,000	+13.53	89,272,000	77,455,000	+15.26
Washington	18,923,000	21,119,000	19,065,000	+10.77	112,531,000	103,462,000	+ 8.77
Wisconsin	32,615,000	36,037,000	32,496,000	+10.90	166,956,000	143,720,000	+16.17
Wyoming	2,771,000	3,387,000	2,780,000	+21.83	13,991,000	12,731,000	+ 9.90
Total	567,771,000	614,197,000	564,613,000	+ 8.78	3,352,261,000	3,061,244,000	+ 9.51
Daily average	18,926,000	19,813,000	18,213,000	+ 8.78	15,813,000	14,440,000	+ 9.51
Increase over previous year	.....	49,584,000	.....	.....	291,017,000	.....	.....
(a) Revised.							
New Jersey	.....	33,305,000	.....	.....	.....	.....	.....

Transactions in Oil Shares on New York Stock Exchange

1926 High	1926 Low	1927 High	1927 Low	Listed Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions Week Ended Oct. 1 Sales	First	High	Low	Last	Change
32⅞	24¼	37⅝	27⅝	(sh) 916,675	N.P.	Amerada Corp.	50cQ	July 30, 27	2,500	31	31	30½	30⅝	— ¼
74	39⅞	64⅞	35⅛	(sh) 209,180	N.P.	American Republics	.....	.....	1,400	47	48⅞	45⅝	48⅜	+ 2⅜
59½	44⅜	50¼	40	$ 56,000,000	$25	Associated Oil	50cQ	Sept. 24, 27	.....	.....	.....	.....	.....	.....
128⅜	97	131⅜	107	50,000,000	100	Atlantic Refining	$1Q	Sept. 15, 27	11,500	119	122	118½	120¼	+ ¾
120	115½	118	115½	20,000,000	100	do pfd	$1.75Q	Aug. 1, 27	600	118	118	118	118	0
33½	23½	35½	20⅞	25,000,000	25	Barnsdall Corp. A	62½cQ	July 15, 27	8,700	22⅜	23	22¼	22½	+ ⅛
29½	22½	32½	21¼	3,842,400	25	do B	62½cQ	July 15, 27	300	22⅛	22½	22⅜	22⅛	— ⅛
68⅛	29¾	32⅞	21⅜	51,523,950	25	California Petroleum	25cQ	Sept. 1, 27	7,700	21⅜	22¼	21½	21¾	0
94¼	50	96¾	65	24,355,000	100	General Asphalt	.....	.....	24,200	72	77¼	71½	76⅜	+ 2⅜
140½	94⅞	144⅞	107¼	6,874,200	100	do pfd	$1.25Q	Sept. 1, 27	1,700	114	118¾	114	118¼	+ 1¾
72	50¼	174½	60½	25,000,000	100	Houston Oil	.....	.....	196,000	153	166¼	147	162⅜	+10½
84	19⅝	32¾	17⅝	(sh) 500,000	N.P.	Independent Oil & Gas	25cQ	July 18, 27	1,400	20⅝	21	20½	20⅞	+ ⅜
13¾	7¼	11¾	7½	$ 3,280,340	$10	Indian Refining	.....	Dec. 15, 20	2,000	11	11¼	10¼	10¼	— ¾
12½	8	11¾	7¼	4,550,110	10	do ctfs	.....	.....	2,500	10¾	10⅜	10	10	— ½
104	90	112	99⅞	2,296,400	100	do pfd	.....	Dec. 15, 21	300	....	109⅞	106	109⅞	— 1⅛
24½	19⅛	34¾	20½	(sh) 3,992,067	N.P.	Lago Oil & Transport	75cQ	Aug. 1, 27	5,700	34	34	32	32⅞	— 1⅛
19⅞	12	18⅛	10½	(sh) 1,131,290	N.P.	Louisiana Oil Refining	.....	.....	7,700	11	11	10⅝	11	0
98	93	97	90	$ 4,000,000	$100	do pfd	$1⅜Q	Aug. 15, 27	.....	.....	.....	.....	.....	.....
28⅞	16½	22¾	13	(sh) 330,000	N.P.	Maracaibo Oil	.....	.....	1,400	13¼	13¾	13	13⅛	— ⅞
63⅜	49¼	58½	31	(sh) 2,316,401	N.P.	Marland Oil Co.	.....	Mar. 31, 27	14,700	35½	35½	34⅝	34⅞	— ⅝
250	225	250	200	$ 45,942,800	$100	Mexican Petroleum	$3Q	July 20, 27	.....	.....	.....	.....	.....	.....
.....	....	....	....	12,000,000	100	do pfd	$2Q	July 20, 27	.....	.....	.....	.....	.....	.....
13¾	6	9¼	3	(sh) 945,839	N.P.	Mexican Seaboard	.....	Nov. 15, 24	400	4½	4¾	4½	4¾	+ ⅛
37	27½	39⅜	28⅜	(sh) 1,357,800	N.P.	Mid-Continent Petroleum	.....	Aug. 1, 27	19,200	28¾	29½	28⅜	28¾	— ½
104¼	90	105	97	$ 6,718,000	$100	do pfd	$1.75Q	Sept. 1, 27	.....	.....	.....	.....	.....	.....
2½	¾	3¾	1⅝	24,435,000	10	Middle States	.....	July 1, 23	1,800	2½	2½	2¾	2¾	0
1¾	½	2⅜	1⅛	5,356,660	...	do ctfs	.....	.....	900	1⅞	1⅞	1¾	1¾	— ¼
2¼	1	1⅞	1	(sh) 3,500,000	N.P.	Pacific Oil	.....	.....	2,100	1⅛	1¼	1⅛	1⅛	0
76½	56½	65⅞	45⅛	$ 48,807,500	$ 50	Pan American P. & T.	$1.50Q	July 20, 27	8,200	51⅛	51⅛	49½	49⅞	— ¼
78⅜	56⅞	66⅜	45⅜	121,094,850	50	do B	$1.50Q	July 20, 27	23,200	51⅞	51⅞	50½	51⅜	+ ⅜
46	30	37⅞	19	(sh) 400,000	N.P.	Pan American Western B.	.....	Jan. 30, 27	1,400	19¾	19¾	18⅝	18⅝	— 1⅛
62	4½	18⅞	8	(sh) 198,770	N.P.	Panhandle P. & R.	.....	.....	1,500	12¼	12¼	11½	11⅞	— ⅜
99⅜	51	83¾	58¾	$ 2,935,200	$100	do pfd	.....	July 2, 23	100	70	70	70	70	0
57⅜	40	60¼	38	(sh) 2,406,796	N.P.	Phillips Petroleum	75cQ	Oct. 1, 27	45,200	42¾	42¾	41⅜	42¼	— ¼
1⅞	½	1⅛	½	$ 29,622,925	$ 25	Pierce Oil Corp.	.....	.....	200	¾	¾	⅝	⅝	0
27⅛	11½	24	13½	15,000,000	100	do pfd	.....	Feb. 1, 22	100	16½	16½	16½	16½	— ¼
7	2¼	5½	2½	(sh) 2,500,000	N.P.	Pierce Petroleum	.....	.....	1,500	3⅜	3⅜	3⅜	3⅜	— ⅛
20¾	11	33⅞	16¾	$ 37,450,850	$50	Producers & Refiners	.....	Sept. 15, 23	45,900	28¾	31	28	30½	+ 1¾
41¾	30¾	50	36⅞	2,845,350	50	do pfd	.....	May 1, 25	10	45½	45½	45¼	45½	+ ½
31	25¼	33½	25⅝	75,939,250	25	Pure Oil Co.	‡37½cQ	Sept. 1, 27	7,700	26¾	27	26¼	26½	— ¼
112¾	106	114	111⅜	13,000,000	100	do 8% pfd	$2Q	Oct. 1, 27	100	112½	112½	112½	112½	— 1
57⅜	47¾	58	45¼	(sh) 616,605	13.40	Royal Dutch, N. Y. shares	$1.80	Aug. 2, 27	1,900	46⅜	46½	45¼	46½	+ ½
40⅝	40½	47⅞	42⅛	(sh) 78,389	F2	Shell Transport & T.	$1.45	July 22, 27	.....	.....	.....	.....	.....	.....
31	24	31¾	25	(sh) 10,000,000	N.P.	Shell Union Oil	35cQ	Sept. 30, 27	3,400	25⅞	26	25½	25⅞	— ¼
114	103	111	107½	$ 18,350,400	$100	do pfd	$1½Q	Aug. 15, 27	.....	.....	.....	.....	.....	.....
28⅝	15⅛	22¾	14¼	7,208,080	10	Simms Petroleum	.....	Apr. 1, 27	4,800	17⅜	17⅝	17	17	+ ⅛
24⅞	16¾	22⅜	16	(sh) 4,501,339	N.P.	Sinclair Consolidated	.....	May 31, 24	14,800	17⅜	17⅝	16¾	16⅞	— ⅛
99½	90	103¼	97	$ 16,907,000	$100	do pfd	$2Q	Aug. 15, 27	200	100	100	100	100	+ ½
37⅛	26⅝	37⅜	24⅛	27,396,590	25	Skelly Oil Co.	50cQ	Sept. 15, 27	2,200	26⅞	26⅞	26¼	26⅜	— ⅛
63⅝	52⅝	60⅜	50⅜	(sh) 13,016,434	N.P.	S. O. California	62½cQ	Sept. 15, 27	10,700	54	54¼	53½	53½	— ⅝
46⅜	37⅜	43¾	35½	$ 606,243,050	$25	S. O. New Jersey	‡25cQ	Sept. 15, 27	37,700	40	40¼	39⅝	40	0
33¼	32½	34⅛	29¾	424,348,275	25	S. O. New York	40cQ	Sept. 15, 27	76,600	31⅞	32	31¼	31½	— ⅜
41⅝	30⅜	34⅞	30	(sh) 1,171,508	N.P.	Sun Oil	25cQ	Sept. 15,27	800	31¼	31⅞	31¼	31½	+ ⅜
....	....	100	99	$ 5,000,000	$100	do pfd	$1.50Q	Sept. 1, 27	600	100	100	99¾	100	0
5¼	1	6½	3¾	(sh) 1,121,368	N.P.	Superior Oil Corp.	.....	Dec. 20, 20	16,100	3¾	4½	3¾	4½	+ ⅝
57⅞	53⅛	58	45	$ 180,428,225	25	The Texas Corp.	75cQ	Oct. 1, 27	75,600	51⅜	51⅝	51	51¼	— ⅛
19½	12	18⅞	12	8,380,340	10	Texas Pacific Coal & Oil	15c	Sept. 30, 27	4,200	14½	14¾	14¼	14¾	0
39¼	37	29⅛	22	(sh) 2,168,264	N.P.	Tide Water Oil Co.	20cQ	Sept. 30, 27	1,700	23	23½	23	23	— 1
103	87¼	89¾	86	$ 20,705,200	$100	do 5% pfd	$1.25Q	Aug. 15, 27	300	88⅝	89	88⅝	89	+ ½
....	....	19⅛	15½	(sh) 4,795,934	N.P.	Tide Water Associated	15cQ	Aug. 1, 27	17,400	17	17⅛	16⅝	17	0
....	....	90¾	86	$ 72,795,900	$100	do pfd.	$1.50Q	July 1, 27	800	86¾	86⅞	86	86½	+ ½
5½	3	9¾	3¾	(sh) 3,742,029	N.P.	Transcontinental Oil	.....	.....	83,600	7⅝	7¾	6¼	7¼	— ¼
58⅜	37¼	56½	39⅜	$ 40,759,475	$ 25	Union Oil of California	50cQ	Aug. 10, 72	13,100	43	43⅛	41¾	41¾	— ½
120⅜	84¼	116½	94	30,734,000	100	Union Tank Car Co.	$1.25Q	Sept. 1, 27	300	111⅝	112	111⅝	112	+ 1
....	....	28½	24½	(sh) 240,000	N.P.	Warner Quinlan	50cQ	Oct. 1, 27	300	25⅞	25⅞	25⅞	25⅞	0
29¾	25¼	27½	22	(sh) 490,000	N.P.	White Eagle Oil & Refining	50cQ	July 20, 27	800	23	23	22	22½	+ ½

*New High †New Low xEx-Dividend ‡Also extras Total Sales 817,710

Cleveland Stock Market

September 30

	Par Value	Bid	Asked	Last Sale
Canfield Oil Co.	100	...	...	100
do pfd.	100	97	...	100
Fred G. Clark	10	..	3	3¼
National Refining Co.	25	35	36	35
do pfd.	100	x130	...	130
Paragon Refining Co.	25	8½	9	8⅜
do pfd.	100	84	...	81

x Ex-Dividend

Oil Dividends

	Amount	Payable	Stock of Record
Eureka P. L. q.	$1	Nov. 1	Oct. 15
Tide Water pfd. q.	$1.25	Nov. 15	Oct. 31

J. Roby Penn, chairman of the executive committee of the Texas Pacific Coal & Oil Co., Fort Worth, has returned to his desk after an extended vacation spent in the eastern states and Canada.

PITTSBURGH STOCK EXCHANGE

1926 High	1926 Low	1927 High	1927 Low	Par Value	Stocks	Transactions Week Ended Sept. 30 Sales	First	High	Low	Last	Ch'ge
8½	5¾	9⅞	6⅞	$ 10	Arkansas Nat. Gas.	5,240	7¾	8¼	7⅞	7⅞	— ⅛
90½	79¾	98⅜	84	100	Columbia Gas.	48	93	93	92⅜	92⅜	+ 2⅛
101⅜	95	107	100	100	do pfd.	47	106¾	106¾	106¾	106¾	+ ¾
17	12½	15	9½	10	Devonian Oil.	120	9	9	†9	9	— ½
116½	112	116¾	115	100	Duquesne Lt. 7% pfd.	10	116½	116½	116½	116½	0
10	5⅛	12¼	6	N.P.	Houston Gulf Gas.	.....	.....	.....	.....	.....	.....
46	39	49½	37¼	$ 25	Lone Star Gas.	3,725	48¼	48⅜	48	48⅜	+ ⅜
47⅜	33⅛	22¾	22¾	25	Ohio Fuel Corp.	.....	.....	.....	.....	.....	.....
47½	42	21⅜	21	...	do ctfs.	.....	.....	.....	.....	.....	.....
6¾	5	6	5	...	Ohio Oil & Gas.	.....	.....	.....	.....	.....	.....
34	21	21	21	25	Oklahoma Nat. Gas	.....	.....	.....	.....	.....	.....
21	19¼	23⅝	20¼	....	do ctfs.	499	21½	21½	21½	21½	0
5⅜	3⅛	3⅞	3	5	Pittsburgh Oil & Gas	49	3¼	3¼	3¼	3¼	0
10	7½	8	6	10	Salt Creek Cons.	.....	.....	.....	.....	.....	.....
27	8	26½	17	10	Tidal Osage	.....	.....	.....	.....	.....	.....
45	40	43	33	N.P.	Waverly Oil Wks. "A"	.....	.....	.....	.....	.....	.....

PITTSBURGH CURB EXCHANGE

1926 High	1926 Low	1927 High	1927 Low	Par Value	Stocks	Transactions Week Ended Sept. 30 Sales	First	High	Low	Last	Ch'ge
3⅜	2½	3½	2¾	$ 5	Columbia Synd.	.....	....	....	....	....	.....
20	.06	.18	.18	5	Duquesne Oil.	.....	....	....	....	....	.....
91½	85	94	88	25	Gulf Oil Corp.	.....	....	....	....	....	.....
79	79	105	93	100	Houston Gulf Gas pfd	.....	....	....	....	....	.....
12	7½	10¾	6¼	N.P.	Leonard Oil & Dev.	.....	....	....	....	....	.....
30¼	29	32	31¼	$ 25	Oklahoma Gas.	.....	....	....	....	....	.....
2	.15	2.70	.75	10	Omar Oil & Gas.	.....	....	....	....	....	.....
....	....	2¼	1¾	....	Pittsburgh Oil Dev.	.....	....	....	....	....	.....
2	1¾	2¼	2¼	5	do pfd.	.....	....	....	....	....	.....
33½	20	31	20	10	Plymouth Oil.	.....	....	....	....	....	.....
7	3	6	5	5	States Oil.	.....	....	....	....	....	.....
3½	2	3¼	1¾	1	Texon Oil & Land.	3,500	1¾	1¾	1¾	1¾	— ¼
25¾	8	23¾	18	10	Tidal Osage (non-vtg).	.....	....	....	....	....	.....

*New high †New Low xEx-Dividend

Standard Oil Stock Traded in New York

1926 High	1926 Low	1927 High	1927 Low	Outstanding Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions Week Ended Oct. 1 Sales	First	High	Low	Last	Change
21	16⅜	21⅝	17⅝	£ 4,000,000	£1	Anglo-American Oil	60⅓c	May 31, 27	1,800	18½	18½	18⅜	18⅜	0
20¼	16½	20½	17⅝	.....	£1	do ctfs. non-voting	.....	.....	600	18⅝	18¾	18¼	18⅜	— ½
2¼	.75	1⅝	.75	(sh) 500,000	N.P.	Atlantic Lobos	.....	.....	1,000	1¼	1⅝	1¼	1⅝	0
5	2¼	4½	2½	$ 000,000	$ 10	do pfd.	.....	.....	400	4½	4½	4½	4½	0
75	65	69	50	1,000,000	25	Borne Scrymser	‡$1S.A.	Apr. 15, 27	50	57	57	57	57	— 1⅞
59½	42	59	45	10,000,000	50	Buckeye Pipe Line	$1Q	Sept. 15, 27	700	57½	57½	57	57	— ½
82½	65	115	76½	3,000,000	25	Chesebrough Mfg.	$1Q	Sept. 30, 27	.....	.....	.....	.....	.....	.....
25⅞	17½	22⅝	16½	38,805,260	10	Continental Oil	25cQ	Sept. 15, 27	6,900	18¼	18¼	17	17⅛	— 1
137	102	137	89	3,000,000	100	Cumberland Pipe Line	$2Q	Sept. 15, 27	200	92	92	92	92	+ 2
63¾	43	58½	47	5,000,000	100	Eureka Pipe Line	$1Q	Aug. 1, 27	650	55½	61	55½	60¾	+ 4¾
32½	9½	13½	7⅛	16,000,000	100	Galena Signal Oil	.....	June 30, 25	.....	.....	.....	.....	.....	.....
94½	35	59¾	33	4,000,000	100	do new pfd.	.....	June 30, 26	.....	.....	.....	.....	.....	.....
97½	40	60⅛	36	2,000,000	100	do old pfd.	.....	June 30, 26	.....	.....	.....	.....	.....	.....
99⅝	52	65¼	54	73,117,577	25	Humble Oil & Refining	‡30cQ	Oct. 1, 27	41,900	64	65¼	62⅞	63⅛	— 1⅜
144½	125¼	164¾	123¾	20,000,000	100	Illinois Pipe Line	$6S.A.	June 15, 27	1,250	162¼	162½	162	162½	+ ½
39¾	32½	64¾	37¾	(sh) 6,491,952	N.P.	Imperial of Canada	‡25cQ	Sept. 1, 27	67,900	59½	*64¾	59½	61½	— 1¼
70	54¼	79	61	$ 5,000,000	$50	Indiana Pipe Line	$1Q	Aug. 15, 27	250	78½	78½	75¼	75¼	— 3¾
35¼	28¾	34⅞	28	(sh) 7,118,138	N.P.	International Petroleum	25c	June 15, 27	71,000	32⅜	34¼	32⅜	33	— ⅜
20¾	12½	17	13½	$ 6,362,500	$12½	National Transit Co.	25cQ	Sept. 15, 27	4,200	15⅞	16⅝	15⅞	16½	+ ¼
51½	27⅜	37	31¼	5,000,000	100	New York Transit	.....	July 15, 26	450	34	36	34	36	+ 2¾
80½	64	91	70	4,000,000	100	Northern Pipe Line	$3S.A.	July 1, 27	100	83	83	83	83	+ 1
67⅜	55¾	64¼	52	60,000,000	25	Ohio Oil Co.	‡50cQ	Sept. 15, 27	900	60¼	60¾	60	60¼	0
24¾	15	31	12	10,000,000	25	Penn Mex. Fuel	.....	May 21, 25	1,600	24	24⅞	24	24½	+ ½
60¼	48	55½	45⅜	60,000,000	25	Prairie Oil & Gas	50cQ	Aug. 31, 27	4,600	51¾	52¼	51¼	51¼	— ⅜
137½	122¼	186	132	81,000,000	100	Prairie Pipe Line	$2.50Q	July 31, 27	1,370	184	185	181½	181¾	— 2¾
220	184½	201½	180	4,000,000	100	Solar Refining	$5S.A.	June 20, 27	.....	.....	.....	.....	.....	.....
27	21	27¼	15½	5,000,000	50	Southern Pipe Line	.....	Mar. 1, 26	600	21½	21½	21	21¼	— ¼
50	34½	41½	34½	20,000,000	25	South Penn Oil	50cQ	Sept. 30, 27	100	37½	37½	37½	37½	+ ⅜
57	49	77	55½	3,500,000	100	South West Pa. Pipe Lines	$1Q	Oct. 1, 27	300	73	73	72½	72½	+ ½
70½	60½	75⅞	64¾	228,415,463	25	S. O. Indiana	‡62½cQ	Sept. 15, 27	19,300	73¾	74½	73⅛	73⅜	+ ¼
36½	16½	20⅞	15⅝	8,000,000	25	S. O. Kansas	.....	June 16, 24	400	17¾	17¾	17¼	17⅝	+ ⅜
134⅜	108	123¾	111½	17,012,599	25	S. O. Kentucky	$1Q	Sept. 30, 27	700	122½	122¾	121½	121½	— 1
51⅜	42	49½	42	4,559,850	25	S. O. Nebraska	63cQ	Sept. 20, 27	.....	.....	.....	.....	.....	.....
672	288	863¾	73	14,000,000	25	S. O. Ohio	62½cQ	Oct. 1, 27	700	78	78	77¾	77¾	— ¼
120½	116½	122	117¼	7,000,000	100	do pfd.	$1.75Q	Sept. 1, 27	.....	.....	.....	.....	.....	.....
23	15½	18	14½	861,466	25	Swan Finch Co.	.....	Nov. 1, 19	100	17½	17½	17½	17½	0
109¾	90¼	134⅝	95½	62,470,800	25	Vacuum Oil	‡50cQ	Sept. 20, 27	2,200	128¼	128½	126	126¾	— 1½

*New high †New low xEx dividend ‡Also extras.

New York Bonds

Week Ending Sept. 30

	High	Low	Last	Ch'ge
Amer. Rep. deb. 6s	99¾	99½	99¾	— ¼
Assoc. Oil gold 6s	103	102¾	103	0
Atlantic Refg. deb. 5s	102	101⅛	101½	0
Barnsdall Corp. 6s	91	90½	91	+ ⅞
Barnsdall Corp. 6s ex war.	98	97¾	98	0
Cal. Pet. 5s	95	94	95	—4
Cal. Pet. 5½s	99½	99	99¼	+ ¼
General Asphalt 6s	106½	106½	106½	+1
General Petroleum 5s	101½	101½	101½	0
Humble Oil & Refg. 5½s	102⅞	102½	102½	— ⅛
Humble Oil 5s wi	99¾	99½	99¾	+ ¼
Mid-Cont. Pet. 6½s	104½	104½	104½	0
Pan Amer. P & T 7s	105½	105¼	105¼	— ¼
Pan Amer. P & T 6s	102⅜	102¼	102⅜	— ⅜
Pan Amer. P & T 6s	94½	94¼	94½	0
Pierce Oil s. f. 8s	102	102	102	0
Simms Pet. cvt. 6s	100½	99½	100	+ ½
Sinclair Con Oil Col. 7s	100	99¾	100	+ ⅛
Sinclair Con Oil con 6½s	96¼	95⅞	96⅛	0
Sinclair Con. Oil 6s	100	100	100	0
Sinclair Crude Oil 6s	100½	100⅜	100⅜	0
Sinclair Pipeline 5s	94	93½	94	+ ¼
Skelly Oil 5½s	95¼	95	95 ⅛	— ⅛
S. O. of N. Y. 4½s	96	95⅞	95⅞	— ⅛
S. O. of N. J. deb. 5s	103⅜	103	103¼	0
Union Oil of Cal. 6s-A	109	108⅞	109	0
Union Oil of Cal. 1st 5s	101⅞	101⅞	101⅞	0
Union Oil of Cal. 5s-C	98½	98	98½	0

New York Curb Bonds

Week Ending Sept. 30

	High	Low	Last	Ch'ge
Beacon Oil 6s '36	101	100⅝	100⅞	— ⅜
Cities Service 5s '66	90	89½	90	+ ½
Cities Service 6s '66	100⅜	101⅛	101⅜	+ ⅛
Cities Service Gas 5½s '42	93⅞	93⅜	93⅜	— ⅛
Empire Oil 5½s '42	92⅝	92	92⅝	+ ¼
Galena S. O. 7s '30	92½	91½	92½	+ ⅛
General Pet. 6s '28	101	100⅞	100⅞	— ⅛
Gulf Oil 5s '37	100¼	100	100¼	— ⅛
Indpen. Oil 6s '39	98⅝	98½	98½	0
Pan Amer. Pet. 6s '40	....	....	....	....
Pennok Oil	6½	6½	6½	+ ⅛
Phil. Pet. 5¼s '39	96	95	95⅞	— ⅛
Pure Oil 6½s '33	103⅜	103¼	103¼	0
Pure Oil 5½s '37	99⅞	99⅝	99⅝	— ⅛
Sinclair Oil 6s	99	99	99	0
S. O. of N. Y. 6½s '33	104½	104¼	104½	0
Sun Oil 5½s '39	101½	101¼	101¼	+ ¼
Tidal Osage 7s '31	....	....	....	....
Trans. Cont. Oil 7s '30	111¾	108½	109	—2½
United Oil Prod. 8s '31	70⅛	70⅛	70⅛	....
Valvoline 7s '37	104¾	104¾	104¾	0
War Quin 6s '42	95¼	95¼	95¼	+ ¼
White Eagle 5½s '57	96¼	96¼	96¼	+ ¼

New York Curb Market

1926 High	1926 Low	1927 High	1927 Low	Par Value	Stocks	Transactions Week Ended Oct. 1 Sales	First	High	Low	Last	Change
6¾	45	2⅞	.55	$5	Amer. Con. Oilfields	53,000	95	100	85	97	+ 3
14½	4	7½	3	N.P.	Amer. Maracaibo	4,200	3½	3⅝	3¼	3½	— ¼
8⅜	5¾	9¾	6¾	$10	Arkansas Nat. Gas	1,100	7¾	8	7¼	8	+ ¼
20⅜	14⅛	20½	15½	N.P.	Beacon Oil	.....	.....	.....	.....	.....	.....
85¼	60	33¾	20½	N.P.	British American	3,700	33½	*33¾	33¼	33½	0
28⅜	9¼	28¼	14⅜	25c	Carib Syndicate(new)	8,100	21½	22	19⅝	21	+ ½
....	....	26	16½	...	do ctfs. of deposit	.....	.....	.....	.....	.....	.....
51	37½	58¾	40¼	$20	Cities Service	21,000	48⅞	49¾	48⅞	49¾	+ ¼
92½	82⅜	92¼	87	100	do pfd.	2,900	90¾	91¾	90¾	91¾	+ ¾
8⅜	7⅜	8½	7⅜	10	do pfd. B	700	8¼	8¼	8¼	8¼	0
25¼	19	29¼	22½	10	do banker's shares	.....	.....	.....	.....	.....	.....
3½	1¾	3⅞	1¾	$1	Colombia Syndicate	2,300	2⅛	2⅛	2⅛	2⅛	0
10⅜	8⅛	9½	7	10	Consolidated Royal	.....	.....	.....	.....	.....	.....
16	10	14⅞	9⅞	N.P.	Creole Syndicate	7,500	10⅞	10⅞	10⅝	10¾	+ ⅛
7⅜	1⅜	3	1	N.P.	Crown Central	300	1⅜	1⅜	1	1	0
8½	½	12	4¾	...	Darby Petroleum	.....	.....	.....	.....	.....	.....
....	....	11½	5⅜	...	do trust ctfs	.....	.....	.....	.....	.....	.....
4	1¾	2½	1¼	N.P.	Derby Oil & Refining	.....	.....	.....	.....	.....	.....
19	13	16¾	10	N.P.	do pfd	.....	.....	.....	.....	.....	.....
7½	2½	3¾	1	N.P.	Gibson Oil	2,400	1⅜	2⅛	1½	1⅞	+ ⅜
2	.63	1⅜	40	N.P.	Gilliland ctfs.	100	50	50	50	50	0
98	82	96½	86¼	$25	Gulf Oil Corp.	5,300	93⅛	93⅝	92⅛	92¼	— ⅝
3⅜	1	2¼	1¼	N.P.	Kirby Petroleum	300	1⅜	1½	1⅜	1⅜	0
12¼	5¾	10⅞	6	N.P.	Leonard Oil & Dev.	4,800	9⅛	9⅛	9	9	— ⅛
27	20	27½	21½	N.P.	Lion Oil & Refg.	200	22	22¼	22	22¼	— ¼
46	31	49½	37	$25	Lone Star Gas	12,300	48	48½	48	48½	+ ½
2¾	2	2⅞	.87	1	Magdalena Synd.	5,800	1¼	1⅜	1	1	0
5½	1⅞	3	1½	10	Mexican-Panuco	.....	.....	.....	.....	.....	.....
1¾	1¼	1½	1	1	Mountain & Gulf	.....	.....	.....	.....	.....	.....
26	23	26⅞	22¾	10	Mountain Producers	2,900	23¾	23⅞	23½	23½	— ¼
6¾	5	5⅞	4¾	5	New Bradford	500	5	5	4¾	4¾	0
11¾	2	6¼	4	10	New England Fuel	.....	.....	.....	.....	.....	.....
17	9⅛	16	9¼	1	New Mex. & Ariz.	1,800	10¾	10¾	10¾	10¾	— ⅛
17	8	13¼	9	25	New York Oil	2,000	11⅛	11⅜	11	11⅜	+ ⅛
12⅛	8¾	12⅝	10¼	N.P.	North Cent. Texas	3,800	10¼	10¼	9½	10	— ¼
44¾	33	....	....	$25	Ohio Fuel Corp.	.....	.....	.....	.....	.....	.....
33	28½	27½	21¼	...	Okla. Nat. Gas ctfs.	.....	.....	.....	.....	.....	.....
10⅛	5⅞	9⅜	1¾	N.P.	Pandem	8,800	3	3¼	2⅝	2⅝	— ⅜
12¼	11¾	12⅛	7	N.P.	Pantapec Oil	12,500	9	9	†7	8½	+ ⅜
2¾	.20	.37	.25	N.P.	Peer Oil Corp.	.....	.....	.....	.....	.....	.....
22¾	12	13½	6¼	$10	Pennok Oil	100	6½	6½	6½	6½	+ ⅛
38	14⅛	24⅜	14⅛	25	Red Bank Oil	.....	.....	.....	.....	.....	.....
30¼	12	15½	2	N.P.	Reiter-Foster	10,500	6¾	6⅞	5⅜	6	— ⅞
27½	22	27½	15	$25	Richfield Oil	500	22	22	22	22	0
7½	4½	7	4½	N.P.	Ryan Consolidated	100	6⅜	6⅜	6⅜	6⅜	+ ⅜
10	7½	8	6	$10	Salt Creek Cons.	200	6¼	6¼	6¼	6¼	0
36	26⅞	32	27¼	10	Salt Creek Prod.	900	29	29	28⅛	28⅛	— ¼
4⅜	1⅛	7	2⅛	5	Savoy Oil	.....	.....	.....	.....	.....	.....
27	7⅝	26½	17	10	Tidal Osage	900	22	22	20⅞	21¼	+ ⅛
25¾	7⅝	23¾	15	10	do non-voting	1,500	21	21	20	20⅛	— 1
....	....	88	63½	100	Transcontinental pfd.	.....	.....	.....	.....	.....	.....
3	4½	7⅜	4¼	5	Venezuelan Petrol	7,500	5¾	5⅞	5⅛	5⅛	— ⅜
31½	22	32⅜	20⅜	N.P.	Wilcox Oil & Gas	100	21½	21½	21½	21½	— ¼
9½	4⅜	8	5⅛	$1	Woodley Petroleum	100	5¼	5¼	5¼	5¼	0

*New High †New Low xEx Dividend

Pan American Profits Are Down 41.9%

NEW YORK, Oct. 1.—Net profits of the Pan American Petroleum & Transport Co. in the first half of 1927 averaged 41.9 per cent less than profits in the first half of 1926 although earnings of the Lago Oil & Transport Co. were included in 1927 and not in 1926. Net profits of the Lago in the first six months this year averaged the same as a year ago although the total was slightly more this year. Mexican Petroleum Co., Ltd., of Delaware, principal subsidiary of Pan American, netted 33 per cent less this year than last.

The parent corporation's net profits in the first half of this year including Lago, totaled $10,861,000 after all charges including depreciation, depletion and estimated federal income taxes, equal to $3.23 a share of the combined 3,362,253 $50 common and class B stock shares outstanding. Profits of the first half of 1926 totaled $15,335,616 excluding Lago and was equivalent to $5.56 on the combined common and class B stock.

Mexican Petroleum netted $9,389,252 after all charges in the first half of this year, equivalent after dividends on the 8 per cent preferred stock to $19.48 on each of the outstanding 457,300 shares of $100 common stock. In the first half of 1926 net profits totaled $14,020,326, equal after dividends on the preferred stock to $29.60 a share on the common.

Consolidated earnings statement of Pan American and controlled companies for the two half-year periods compare:

	1927	*1926
Operating profit	$19,833,563	$23,870,915
Interest, amort.	†117,820	255,900
Deprec., deplet.	7,209,849	5,591,345
Federal taxes	1,616,000	2,435,000
Minority int. share	264,334	253,054
Net profit	$10,861,200	$15,335,616

*Excludes Lago Oil & Transport. †Credit.

Consolidated earnings statement of Mexican Petroleum and owned companies for the two half-year periods compare:

	1927	1926
Operating profit	$14,148,920	$19,941,806
Interest, amort. (credit)	908,848	196,298
Total income	$15,057,768	$20,138,104
Deprec., deplet.	4,268,516	3,927,778
Federal taxes	1,400,000	2,190,000
Net profit	$9,389,252	$14,020,326

Consolidated income accounts of Lago for the two half-year periods compare:

	1927	1926
Operating income	$3,806,565	$2,932,630
Deprec., deplet.	1,343,848	672,773
Operating profit	$2,462,717	$2,259,857
Other income	15,607	160,072
Total income	$2,478,324	$2,419,929
Taxes	216,000	160,000
Minority interest	10,652	22,316
Net profit	$2,251,672	$2,237,613

THE OIL INDUSTRY EXCHANGE

Positions Wanted

C. A. Knight recently returned from Argentina where he was employed by the Bethlehem Steel Co., in the capacity of General Superintendent of Refinery, wishes to make connection with some Company as Superintendent or in an Engineering capacity. Address 924 North Lawrence, Wichita, Kansas.

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We have an opening for two more High Grade specialty salesmen to call on the Wholesale Oil Trade. Only men of proven ability and who know the trade will be considered.

The Air Scale Company,
Toledo, Ohio.

DISTRIBUTOR SALESMEN WANTED

by refiners and marketers of 100% Pennsylvania Motor Oil to cover Ohio with a branded product. We are interested only in a man with a successful sales record and a following among distributing trade.

Box 175, Oil City, Pa.

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or chemical engineer—one who has had oil and refinery experience—to take charge of laboratory and do experimental work. Give some personal history of self, age and what salary will be considered—address Box 753, care National Petroleum News, Tulsa, Okla.

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Service and Sales Engineer (preferably graduate) over 30—with minimum of three years actual service experience in Railroad Lubrication. State details fully.

Box 958

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We have a client who has attractive territories open for reputable manufacturers agents. Men calling on gasoline and oil trade to handle well-known gas and oil metering equipment. State territory desired and lines handled. All letters handled in strict confidence. The John S. King Co., Inc., 1220 Huron Road, Cleveland, Ohio.

Advertisers having box numbers should be addressed in care of National Petroleum News, 1213 W. 3rd St., Cleveland, Ohio, unless otherwise specified.

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Broker in
OIL MARKETING PROPERTIES
Second & Walnut St., N.E.
CANTON *Tel. 29405* **OHIO**

RELIABLE REFINERY CONNECTION WANTED—Canadian Oil Company having excellent connection, and experienced executives, desires to form subsidiary of some United States Refinery. Sole Canadian Franchise wanted, and purpose being to form Canadian Company. Address Box 960.

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Trading in filling, bulk and marketing stations.
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ONE CARLOAD CONTAINING (60 STEEL BARRELS) 300 VISCOSITY @ 212 TRANSMISSION GEAR OIL for sale. 13c per gallon F.O.B. Louisville. Stoll Oil Refining Company, Louisville, Ky.

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Excellent for recovery of crank case oil or breaking of oil emulsions. Equipped with A. C. motor, at a very reasonable price. Also a few steam turbine driven machines available. Also 2 No. 12 Sweetland Filter Presses, and 23 Oil Tank Cars. Acme Oil Corporation, 189 No. Clark St., Chicago, Ill.

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Eight practically new National Cash Registers. Specially adapted for the oil business or garage.

GEO. W. TUBBS OIL COMPANY
Grandville & Godfrey Aves.
Grand Rapids, Mich.

DISTRIBUTING PLANT FOR SALE
consisting of:—1 Service Filling Station, 1 Warehouse—Capacity—3 carloads of lubs in drums & two trucks, 76,000 gallon storage tanks for gasoline, 12,000 gallon storage tanks for kerosene.

Stutting Oil Company,
Mount Pleasant, Michigan

Miscellaneous

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"Positions Wanted"—5 cents a word. Minimum charge $1.00.

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All advertisements carried on this page are payable in advance.

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